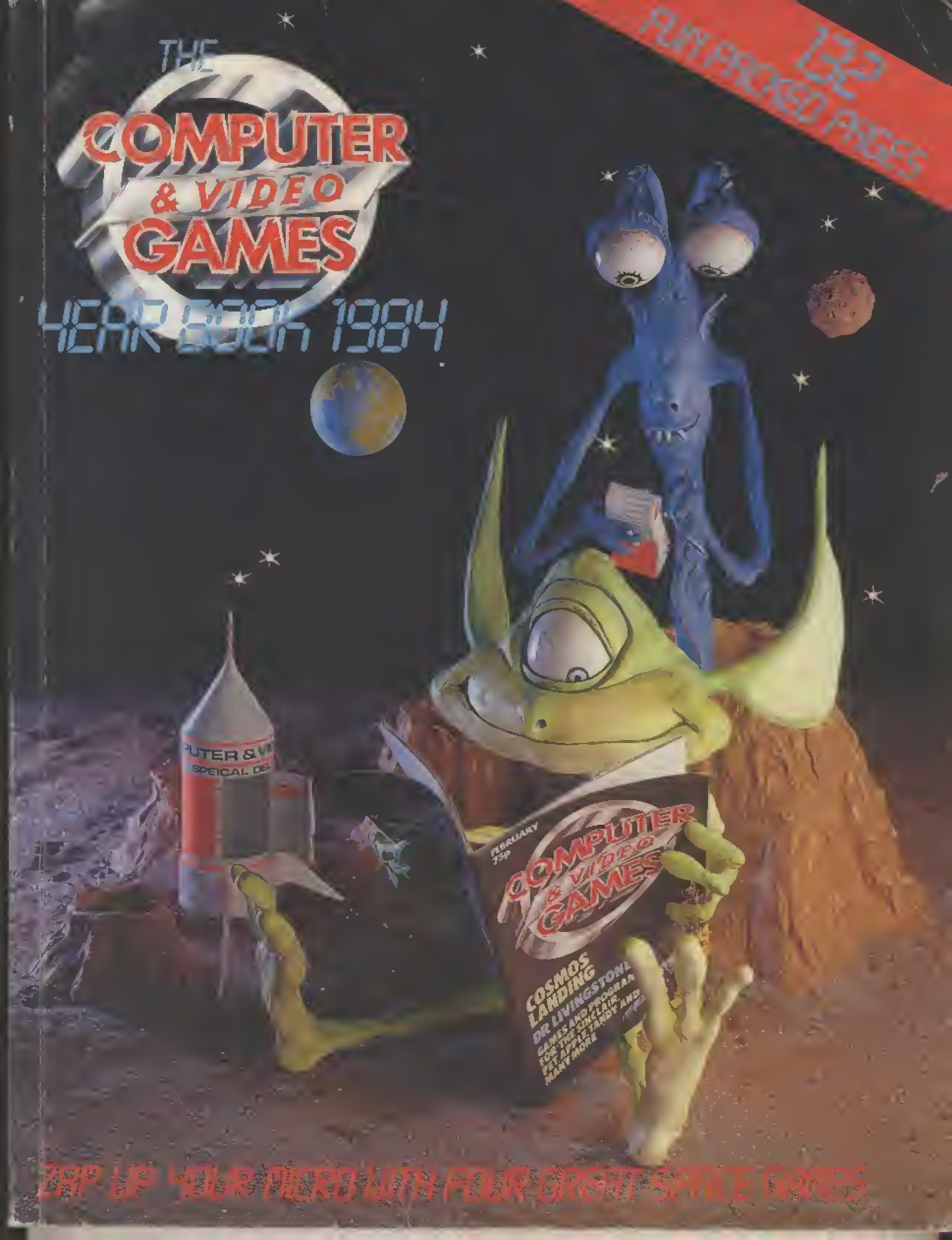
THE

# COMPUTER & VIDEO GAMES

## YEAR BOOK 1984

132 FUN PACKED PAGES

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# MEET OUR CHAMP

## Julian takes the arcade crown

The Computer & Video Games 1983 Arcade Championships were only decided during the last few seconds of the action in July's thrilling final day.

Eighteen finalists were invited to the plush Xenon nightclub to compete against one-another and Radio 1 DJ Dave Lee Travis.

Some of the finalists got up early that day to appear on the BBC's morning programme *Breakfast Time* for an unofficial championship warm-up.

Then the 18 split into six groups of three to tackle their favourite machines with the highest scorer moving onto the next stage of the competition.

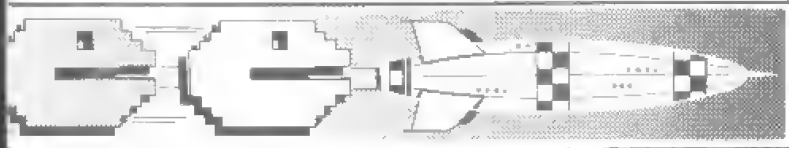
This was played on a new machine saved especially for this competition by co-sponsors, arcade manuacturs Taitel. This was the graphically and musically awesome Gyruss unveiled by radio Luxembourg DJ Tony Prince and none of the finalists had a chance to play on it before the final.

Hot favourite from the Isle of Wight, David Rossset then set the pace with a 72,000 score on the machine and it seemed cut-and-dried until the last finalist, Julian Rignall from Wales started to battle his way close to David's score.

And at the last gasp he overtook it to notch 73,110 points and take the title.

Julian took a cocktail table version of Galaga back back to his home in Llangeitho in Dyfed, Wales. He won his place in the final of the evergreen defender game which still attracted the most entries from arcade players across the country. The other games which made up the final were: Donkey Kong, Donkey Kong Junior, Mr Do, Robotron and Amidar.

Dave Lee Travis turned up at the end of the day to present the finalists with certificates, Donkey Kong Junior hand-held games-watches from CGL and Julian with his Galaga machine.



# C·O·N·T

## WELCOME TO THE YEARBOOK

**Unfolding before your very eyes is the first-ever *Computer & Video Games Yearbook*.**

**We've used some of *Computer & Video Games* magazine's most potent resources to put together a book we think computer buffs will love.**

**The jewels of this collection are four marvellous games set in another distant galaxy and setting your computer alive with intrigue, action and adventure.**

**Keith Campbell wrote the fascinating adventure *The Vexspozian Affair*, set on a spacecraft.**

**Mike Singleton came up with *Interstellar Intrigue*, a game of diplomacy on a galactic scale, simple to play but so difficult to win.**

**Ron Potkin contributed *The Beacon Star Wars*, where two alien races struggle to capture the energy giving beacon stars.**

**And Pat Norris was the brains behind *Pirates & Polyps*, space arcade action but with room to think out your tactics.**

**We were so pleased with these games that we converted as many as were practical over a range of computers which include the BBC, Atari, Spectrum, Dragon and Vic-20.**

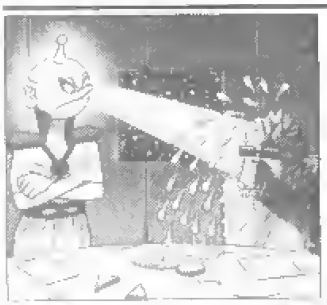
**In the spaces between the games we packed in features about computer gaming and the people who made the industry what it is. There's plenty of cartoon fun with those horrors the Bugs and Trevor Truran sets you Puzzling with his brain teasers.**

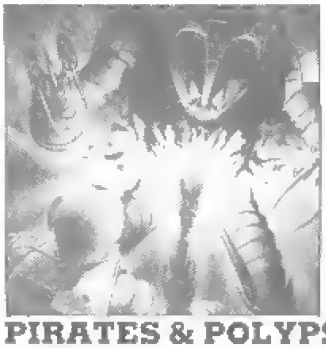
**It's not often that the *special* delivery rocket arrives on this lonely outpost of the galaxy. But when it does there's always a rush to see the latest issue of *C&VG*. This photograph was captured by the lens of Mike Goss and the two aliens were put together by Dorian Cross. We hope you get as much out of the yearbook as Dorian put into this marvellous model.**

## SPACE ADVENTURES


### INTERSTELLAR INTRIGUE.....21

Five hardened diplomats meet to share out the galaxy but each hopes to wrest complete control for himself. Take the part of Grakta the Bloodline delegate or Maachen the lizard from the Water Empire (up to five can play) as the fate of suns planets and fleets rests on your negotiating. Mike Singleton wrote this novel and tactical game for the Spectrum. And there are versions for the Dragon, BBC and Atari too. Illustrated by Stephen Gulbis. Can you take control of the galaxy when the might of four other empires is ranged up against you?

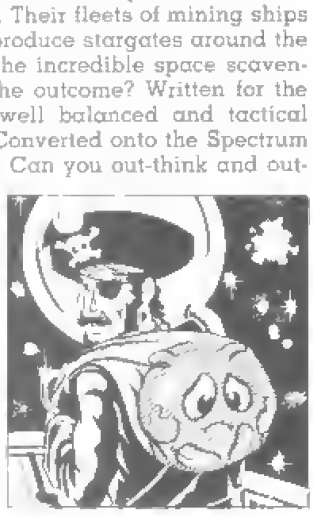



### BEACON STAR WARS .....38

Two alien tribes discover the secret of the beacon stars and realise that whoever controls this sector of space will have a say in the running of the galaxy. Their fleets of mining ships and gun ships help the race to produce stargates around the discovered stars. But what are the incredible space scavengers and how will they affect the outcome? Written for the Dragon by Ron Potkin, it's a well balanced and tactical strategy game for two players. Converted onto the Spectrum too. Illustrated by John Higgins. Can you out-think and out-fight your opponent?

### PIRATES & POLYPS.....52

The polyps are a rare and precious space commodity which you hope to attract down to your planet with a deep space scanner. But the pirates are out to steal the polyps away and to wreck your scanner and ground lasers. It's a battle of wits as you try to draw a bead on the pirate ships in the atmosphere and blow them out of the skies before they make off with a polyp — or worse — dive bomb your defences. Written by Pat Norris for the Spectrum we also have conversions for the Atari, Vic-20 and Dragon. Illustrated by Peter Harris. Do you blow up a pirate or pull down a polyp? It calls for fast wits as well as quick reactions.

## GAMES EXTRA


### YAHTZEE.....92

Come on Bud, roll them dice! You know this game 'aint fixed. Join our disreptable team of dice-men.

### 3D MAZE .....100

Get lost! And then find your way home again. That's the aim of this challenging maze escape game. Mind-boggling frustration for Sharp owners.

### METEOR ATTACK .....110

Your city is in danger. A heavy shower of meteors is heading straight for it from the depths of space. Your mission is to destroy them before they destroy you! Space action on the Atari.

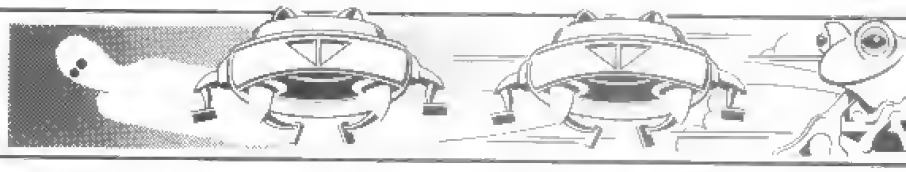
### TRACKER.....112

Androids are on the loose again and threatening the safety of everyone in Vic-ville.

### PAC-MAN .....116

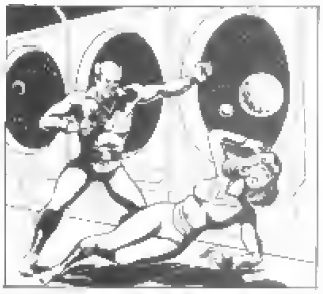
A heart-rending tale of a Pac-Man who thought he was going to be left out of this Yearbook. Fun on the Spectrum.

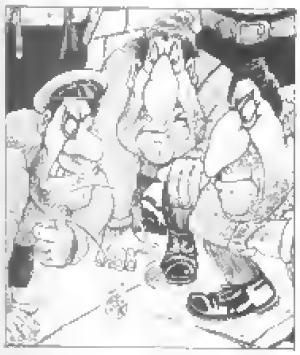
# E·N·T·S




**THE VESPOZIAN AFFAIR .....68**

D'Taan knew that she was on the verge of a great discovery, all the information was at her fingertips she just had to put two and two together. But if she makes her discovery will she be able to persuade Captain Bezel to change course to the right planets in time? How far can she trust Grakta — will he turn her over to the Bloodline Empire and can Machen be persuaded onto her side? An adventure with a real difference by Keith Campbell, where the action moves through space, goes beyond the ship and where some of the characters move independently. It was written for the Dragon but we converted it to the Atari, Dragon and BBC. Illustrations by David Pugh.





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We shed new light on the real strategies and motives behind the great invasion and find out that despite suffering enormous losses, the green meanies actually won.

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How do you get to the final screens of Raiders of the Lost Ark? What's the best way to tackle Pitfall Harry. Eugene Lacey tells you how to tackle your favourite games.

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It's big business and it's really taking off. Soon all your favourite book and film characters will be appearing on the small screen in computer or games centre form. Read about the million dollar deals which take them there.

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In the future you will surrender all your senses to the game that comes into your home through a cable.

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Tim Metcalfe is pinball crazy, but he's not the only one. We sent him down to meet a family who think more about flippers and drop targets than even he does.

**DARK CRYSTAL.....129**

We asked our magazine readers to draw a character or a scene from the fantasy Muppet movie, The Dark Crystal. Alan Outter was the winner and you can see just how he reproduced Jen the Gelfling on page 129. Then try it yourself on a BBC.

## THE REST

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We asked Trevor Truran to set your Earthling brains enough puzzles to keep them busy until this time next year. Trevor starts Puzzling on page 8 and there are more on pages 12, 20, 106 and 128.

**THE BUGS.....9**

Every-so-often we have to kick ourselves to remember that the Bugs are the creations of cartoonist Elphin Lloyd-Jones They don't really exist in your computers. They go into action on pages 9, 14, 15 and 20. Ruining programmes, blowing up computers and planning chaos, just like they did in our computer room only last week. Maybe they are real after all!

**EXPERTS.....18**

Would you like to add some professional gloss to your computer programs? We asked some software experts to tell us how on their computers. Malcolm Evans of New Generation Software gets to grips with the Spectrum on page 18. Simon Hunt of English Software explains how to get the best from the Atari on page 66. And Nat and Franklin of Salamander Software tame the Dragon on page 90.

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Puzzled by computer jargon? We'll put a stop to all that. Robert Schifreen has composed the definitive computer glossary to take the jargon out of computers.



**Editor** Terry Pratt, **Art editor** Linda Freeman, **Production** Tim Metcalfe, **Staff writer** Eugene Lacey, **Glossary** Robert Schifreen, **Advertisement manager** Rita Lewis, **Assistant advertisement manager** Rob Cameron, **Advertisement executive** Louise Matthews, **Advertisement assistant** Louise Flockhart, **Publishing director** Tom Maloney. Published by Computer and Video Games, Durrant House, 8 Herbal Hill, London, EC1R 5EJ.


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# EVOLUTION OF THE

**In 1977, when the first unidentified grunts were heard in your local, the video games industry was born. It grew fat on the back of the space invasion, arcades sprang up, new manufacturers began creating alternative invasions and it blossomed.**

**Then came the pruning years of 1981-82, when the novelty wore off, leaving hardcore arcade go-ers who could spend hours on one 20p and those who flirted with new video games — a few 20ps a night in the pub.**

**Eye-catching graphics and sound effects which attracted attention, without driving everyone into the saloon bar, were produced.**

**With home TV games centres and personal computers forever narrowing the gap in time before they produce their own arcade look-alikes, new thrills have to be constantly found and the arcade video games still lead TV games centres and home computer games, in innovation and standards of graphics and sound.**

Was there motive behind the madness of the great 70s space invasion?

After some early success against the "untrained" defence forces, the later waves took an awesome hammering. Wave after wave was wiped out, sacrificed for the odd laser-base scalp — and still they kept coming.

For years the slaughter went on, some of the aliens began to look like the raw recruits they must have been, barely trained in the use of their lightning bolt missiles, before being rushed to the front line.

Reports of the carnage must have found their way back to the alien generals (or did too few saucer messengers get through), news that Earth's unofficial defenders were getting their collective eye in. Could it be that these losses were acceptable?

The common or guardian invader (Invadus Nipponicus) was having a hard time of it and then a new breed emerged in the scene. The advent of wings made saucers unnecessary and this new species made use of the swarming principle to become Galaxians. No longer the steady trudge through the stratosphere accompanied by the inevitable grunts, these aliens wheeled down depositing a steady stream of bombs, trapping defenders in corners and diving kamikaze-like upon them.

A new mutation and the world fell victim to Defendus Americaans. The first game of a great series by Williams former designer Eugene Jarvis, he followed it with Stargate and finally Robotron, as the aliens switched their base from Japan to the U.S. for a short while.

But while the new aliens took over the space invaders' traditional territory in the arcades, the old enemy was planning a new campaign. It moved straight into the Earthly homes and setting up residence in the humans' previous major defence, the telly ... a master stroke.

No more escaping from the meanies by rushing home to watch *Coronation Street*, the little devils were their waiting for you, courtesy of the home TV games centres.

Atari VCS aliens were a different shape but undoubtedly the same breed: antennae wriggling, legs twitching and fighting in profile but invaders none-the-less.

And susceptible to earthly defenders, who cut them down in their droves. Could it be that the distant intelligence behind this concerted onslaught had made yet another error or tactical judgement — or was this manoeuvre more evidence of the subtle planning going on in some far corner of the cosmos?

## The green meanies' master plan
### By Terry Pratt

Maybe so, because the next avenue of attack was a complete switch in tactics. No longer could mankind justify the slaughter of the galactic innocents by claiming that death was too good for the 'orrible little alien insects, who only had destruction in mind.

Pacman was different, all the characters were lovable. Here was a hero you could really relate to: a yellow featureless blob continually opening a black maw to sate his massive appetite.

Even the villains, the ghosts, were pretty cute: big doleful eyes and sweet names like "Blinky". Their mission might even have been misinterpreted as reasonable to prevent Pacman from eating their world to destruction. Subtley mankind had been switched from the side of the good guy to become the destroyer of good guys.

We took this change in good stead and soon ghosts were disappearing almost as fast as invaders had once done. But in Pacman we had a game which could actually cause us physical injury. Games were interspersed by finger soothing sessions, when caloused and bruised joints were nurtured back into shape ready for the next bout.

While Pacman took over our hearts in the arcades, the space invaders had found a new realm to conquer as they blasted their way into the home computer circuits.

At first this latest manifestation of invader was barely recognisable as the real thing. Many of them were featureless, even more, suffered from a slowness and jerkiness of movement which made them easy and unsatisfying targets.

Worse still, many of the early versions, could not even fire back and merely relied on getting to the hottom of the screen.

But they were still thriving in this new medium, and people were crying for more and better versions — eventually these poor recruits were replaced by creatures that could pass for the real thing and the galactic invasion continued apace — although still more young invaders were destined never to see their mothers again.

# SPACE INVADERS

Pacman's insatiable appetite was also outgrowing the arcades as he munched and chewed his way onto the home screens. First he ignored the TV games centres by moving straight onto a variety of home computers. Then he backtracked to the Atari VCS system and arrived with a bang.

A whole new maze to wander and some flickering opponents to negotiate but Pacman was not a creature to let a change of environment ruin his appetite and the alien attack found itself with a new hero.

A heroine was not long in emerging as the attack was launched on the other half of humanity. Could women be tempted into the arcades by relating to Ms Pacman? Hardly a feminist heroine, despite insisting on the "Ms" part of her title. She had a bow in her "hair" and really just wanted to settle down and have baby Pacmen.

If women were the real target of Ms Pacman, then this was a setback to the cosmic intelligence's masterplan. Perhaps the real aim was to find a way of propagating Pacmen faster. Anyway, the male of the species took readily to Ms Pacman without worrying about role reversal, and turned it into a success.

Role reversal was fast approaching in another form. Donkey Kong pitted us against one of our favourite horrors, a mighty gorilla capturing a starlet and escaping to the top of a tall — if unfinished — building. We took the role of the poor carpenter Mario as he rushed to the starlet's rescue.

Then came Donkey Kong Junior and Mario was the enemy. A villain of the first degree, actually given the prefix wicked, who had locked up poor old Kong and was dealing out doom and destruction to the gorilla's heroic offspring as he tried desperately to rescue his Pa.

The Donkey Kong duo of games proved how fickle mankind's affections could be, we were putty in the hands of the great intergalactic game designer, if he told us black was white, we'd believe him.

It also reversed the trend of thousands of the enemy being wiped out for the odd one or two human hero casualities. Now we were witness to the destruction of many Mario's without ever quite getting to grips with Kong.

And it also showed that the aliens producing these games had discovered our love of the cinema. They were giving us sequals like Space Invaders Part II and they were giving us heroes we already knew.

This trend continues to this day with Buck Rogers, Star Wars and Star Trek, being among the latest titles produced.

And the cinema played an even greater role in Tron, where the game was based on a film which was based on the game. And that fiction of film stars going inside the machine, is no being turned into fact by laser disc technology which uses film clips to build up a game which switches the action to match the player's shooting and manoeuvring.

The alien intelligence has also moved back into its' true colours, space creatures, as the new games prove: Xevious, Astron Belt, Mad Planets, Zaxxon, Gyruss...

The space invasion has been long, and it's been hard-fought and the casualties have been horrifying. But what have the invaders achieved at the end of it all?

Well, they succeeded where almost every film and fiction alien failed. They wormed their way into our culture, set up bases in our homes and in our social haunts and we've not only accepted their presence, we actually want to take the credit for it — in short, THEY WON!

# PUZZLING

## CRAZYKONG

BY TREVOR TURAN

*Once again Dolores Devine has been foolish enough to join Crazy Kong on a sightseeing tour of the Empire State Building and is now standing somewhat reluctantly on the roof garden with her hairy host as he plays with a helicopter.*

*Only **Lizardlegs** can scale the building in time to save her and there just happens to be one safe way to the top.*

*Fortunately, by a coincidence a rare that you may be tempted not to believe it, the Christmas decorations in the office windows do mark out the route he must take.*

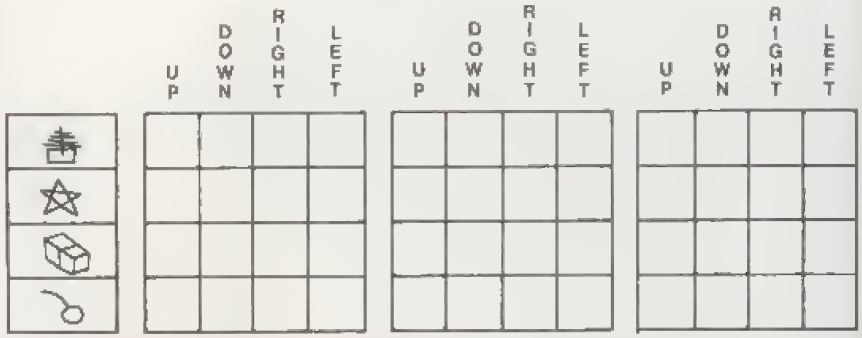
*Each symbol has a meaning. One represents UP, another DOWN, a third RIGHT and the fourth LEFT.*

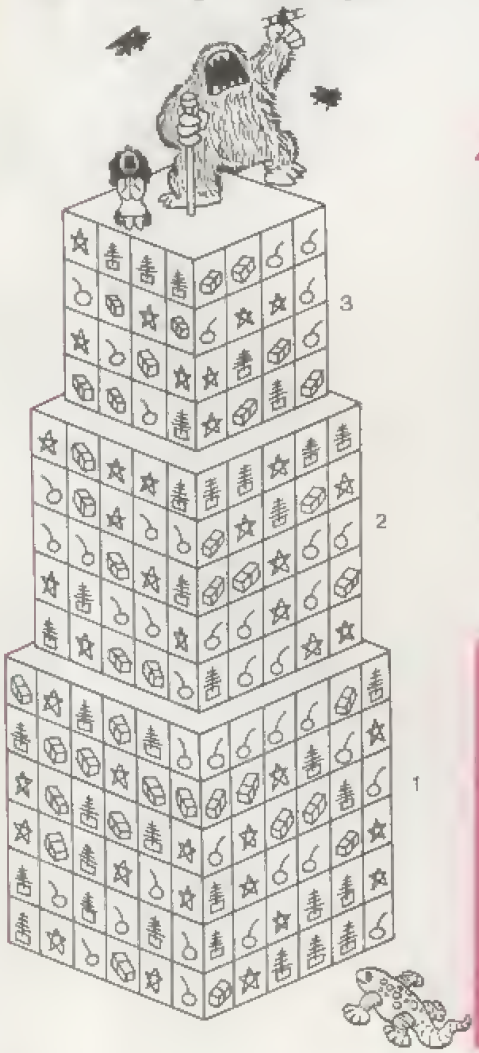
*Just one snag — the symbols change their meaning at each level and never have the same meaning again. So, whatever is, say UP on level one cannot be UP on levels two or three.*

*It may look an impossible task to find the only route and **Lizardlegs,** so adept at adhering to glass, is at a loss as to know how to begin his task. Can you help by marking out the one pathway?*

*It isn't as difficult a task as it looks and the grid may help — enter a cross for an impossible meaning for a sign and a tick when you know it for sure.*

*A little thought and you can guide our window wiping friend to the roof — but hurry, Dolores is screaming again and her voice has already put two TV stations off the air...!*




## DAMAGED GOODS

*Another failing of the McCoy Co is their employment of drivers who believe that corners are optional. As you can see, the latest consignment of video favourites has arrived at the rear of the premises in something of a mess.*

*When the lorry set out each layer contained three types of cartridge but the collision with the wall has concertina-ed the contents.*

*The only good thing is that the letters of each game are still in their correct order, so, if you don't mind lending a hand, you can name all twelve games and restore order from chaos.*

*Otherwise the world will have to get used to* **KOGRZERSH** *in the Top Ten and no one will play a game with that name, will they?*

*Top Layer: BERZERK TRICKSHOT FROGGER*

*2nd Layer: GALAXIANS PACMAN UTOPIA*

*3rd Layer: PHOENIX DRACULA PITFALL*

*4th Layer: MEGAMANIA STARMASTER DEFENDER*

THE BUGS
YOU WONT BELIEVE THESE TIMES. THEY'RE REALLY FAST BOY HAVE WE GOT A FINAL ON OUR HANDS..
THIS IS THE QUICKEST BATCH OF SPACE-INVADERS I'VE EVER SEEN. WATCH OUT FOR THE RUNNERS IN LANES TWO AND THREE..
YAWN!
TAP!
..IT'S GOING TO BE BETWEEN THEM. NUMBER 17 RAN TWO SCREENS IN 3·47 SECONDS..
17
HE SPENT TWO YEARS TRAINING FOR SAUCERS BUT NARROWLY MISSED OUT ON HIS FLYING LICENCE. HE HURLED A MISSILE 6·4 CMS..
NUMBER 18 IS BERTRAM BLASTER FROM THE THIRD ARM WAVERS. SCREEN TIME 3·42 SECS..
FLASH!
18
..AND HIS HOBBIES ARE METEORITE SURFING AND DEMOLITION AND HE WANTS TO TRAVEL. HE CAN HURL 3·7 MISSILES PER SECOND
THIS IS MY BEST SIDE!
ON YOUR MARKS.. GET SET..
START
GO!
TRIP!
ERK!
FINISH
17
THE WINNER!
WELL NO 4734's LAST INVADER.
CLAP!
I BET YOU ALWAYS WONDERED WHY THE LAST ONES WERE THE FASTEST!

# The New Heroes

**We take you to Liverpool to meet Dave Lawson the designer/ programmer of Arcadia, Spectral Invaders, Spectral Spectres, Ah Diddums, and Schizoids.**

**Lawson: "I knew my work would be valuable one day"**

IF there is one person in England who you could describe as the country's top games programmer it must surely be Dave Lawson.

Like a top pop star Dave, co-founder of Imagine, the Liverpool software house, can look back on a string of number one hit games.

But Dave's successes have not just been top selling games they have also been first in other respects.

Spectral Invaders was the first commercially produced game for the Sinclair Spectrum, Space Warp the first commercially produced game for the BBC, and Dave was also heavily involved in the controversial Vic Men, the first game for the Vic-20.

Soon after these games were produced Dave wrote one of Bug Bytes' all time greats — Spectrum Spectres. The money earned on Spectres enabled him to go into business for himself with another ex-Bug Byte employee — Mark Butler — and so Imagine was born.

Shortly after the split with Bug Byte Dave was back at the keyboard but this time writing games for his own company. By last Christmas Imagine were able to launch their first game — Aracdia. The game was an instant hit on the Spectrum and has since been converted for the Vic-20 and the Commodore 64.

Pressure of running an expanding company has forced Dave away from the computer though he still found time to write Ah Diddums, released in January.

I managed to steal an hour out of his hectic schedule to find out a little about the man behind the games.

Born twenty-three years ago in Liverpool and educated at Quarrymount Secondary Modern, Dave left school and home at 15. "I lived with friends and did odd jobs — anything really. It's easy to get jobs if you get the technique right. I spent the next two years hitch-hiking, sometimes by myself and sometimes with other people.

"When I was seventeen I joined the merchant navy as a trainee engineer. The next year and a half were spent at various colleges. It was boring. They make you spend about four years at college before you get anywhere near a ship."

The navy and Dave parted company in the summer of 1979 and he was back in Liverpool, back to the odd jobs and the hitch-hiking but this time much further afield — Spain, Italy, France and Germany.

He shrugs at the suggestion that hitch-hiking can be a lonely way of travelling: "It teaches you to be independent."

It was at this time that Dave's

interest in computers began. "I'm a compulsive reader. I read anything. I started reading electronics magazines especially Electronics Today International. I got interested in it because it seemed difficult. Eventually I saw an advert for a kit computer — a Nascom. I went straight out and bought one from Microdigital in Liverpool."

"It took me about a week to learn machine code. I didn't bother with basic. I couldn't see the point."

Dave was soon writing his own programmes and developed a sharp disapproval for the professional software currently available in the entertainment field. Of his own work at this time he was more confident. "I knew it would be valuable one day".

Valuable could be taken as something of an understatement from a man who has just taken delivery of a brand new Ferrari Mondiall.

A Ferrari is hardly the choice of a modest man, although Lawson insists that the money is not his main motivation. "The money means nothing to me. It's the satisfaction of being the best. I feel proud of our games and proud of Imagine. We are also providing people with good quality products, which also gives me pleasure".

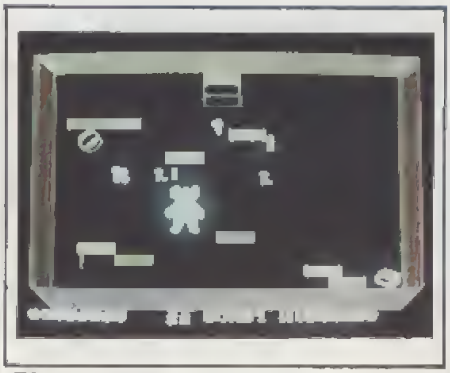
His current project is the setting up of what Dave calls a "software development environment". This is an ideal set of circumstances, tools, working conditions, programmers, and artists which collectively produce a good computer games production line.

"There is no quick way of writing a good game. We brain storm our programmers all day. Fire ideas at them. We now have two artists working on graphics for the games. In the ideal programming environment the artists and programmers would work together throughout the course of the project."

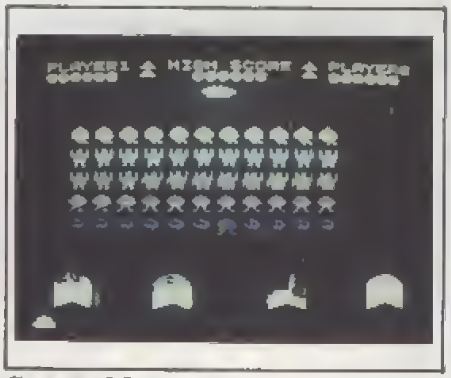
Since Imagine's launch less then twelve-months ago the company has spawned an advertising agency and there are half a dozen other companies in the pipeline.

Lawson believes in himself and partner Mark Butler. "I think we make a great team. I met him in Laskys. I was playing Star Raiders at the time and he came up to me as a salesman. Good game, he said. I'm going to write one much better I said."

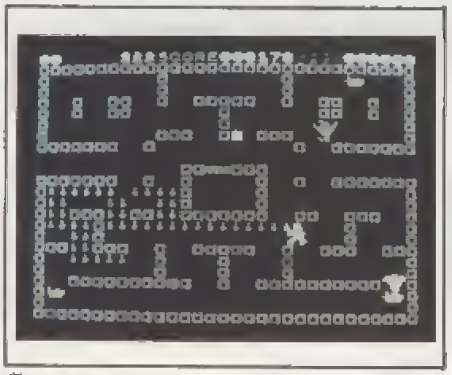
**Arcadia, Spectres, and Spectral Invaders, "classics" that every Spectrum owner would want in his collection.**



**Ah Diddums**



**Spectral Invaders**



**Spectres**

In the short term Imagine will be continuing to produce games for the Spectrum and also for the Commodore 64 before the end of the year.

Lawson says his long term plans are: "To become the biggest software company in the world and to become a public company by 1985."

And with what he has achieved so far we're convinced that this software supremo will do just that.

Lawson's first job in the computer games came as a result of seeing an article about a comparatively unknown firm that had just moved to Liverpool.

The firm was called Bug Byte and Dave was invited to join the team after showing the firm's bosses how to use one of their new computers.

When the Spectrum first appeared all the software houses were racing to get the first game on sale.

Dave was Bug Byte's main hope in this race and after thirteen failed production models managed to write the game from a pre-printers copy of the Spectrum Users Manual. Bug Byte were gambling that the manual and Lawson's interpretation of it were one hundred per cent accurate. The gamble paid off and Spectral Invaders is to this day the most accurate copy of arcade Space Invaders available for the Spectrum.

Dave's talent for arcade cloning was to pay off again for Bug Byte when Dave wrote Vic Men, a straight take-off of Pac Man, for the then new Commodore machine. Unfortunately for Bug Byte the game had to be withdrawn in the face of a threat of legal action by Atari — the holders of the Pac Man copyright.

For Imagine the past nine months has been a period of unprecedented growth.

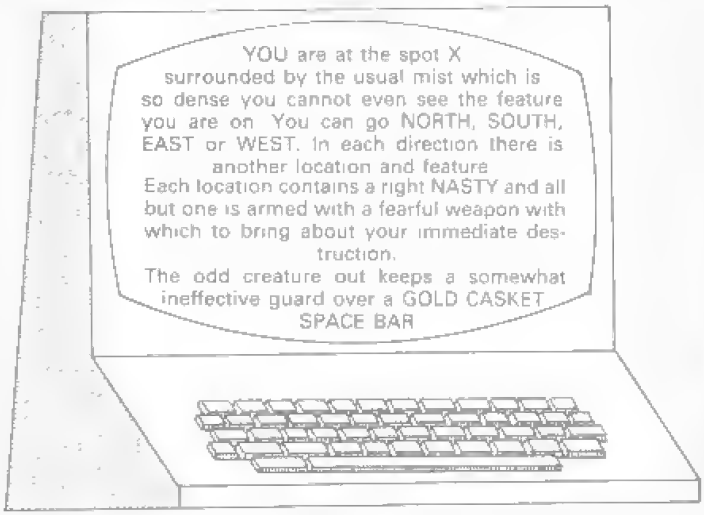
They have gone from a small office with three employees to a large office block in the centre of Liverpool with twelve employees.

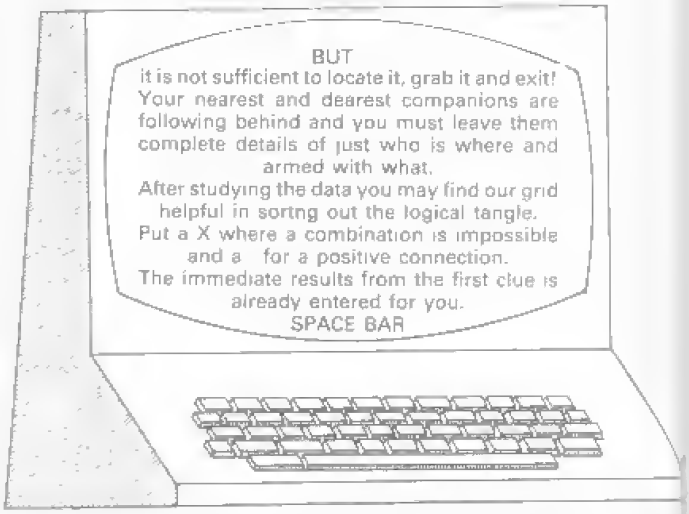
Imagine's General Manager Bruce Everiss boasts proudly of "taking scousers off the dole". When we set up our own production and packaging facility we will take "first seven and then forty scousers off the dole".

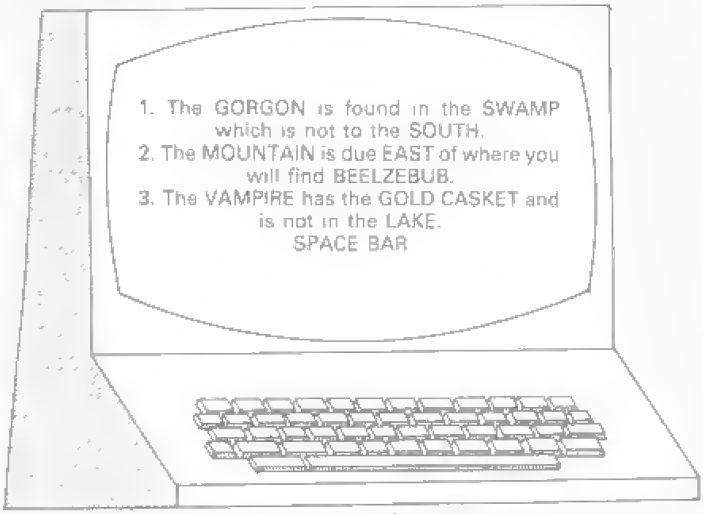
Here at Computer and Video Games we reckon that Lawson and Imagine will be creating games that will keep them in the limelight for years to come.

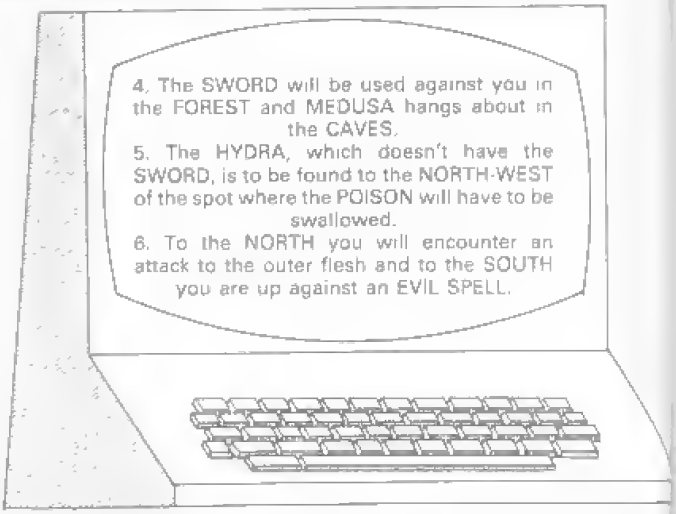
# THE SPLURGS OF MOG

*The story so far:*




| | X | NORTH | SOUTH | EAST | WEST | MEDUSA | BEELZEBUB | HYDRA | VAMPIRE | GORGON | GOLD CASKET | POISON | EVIL SPELL | FIRE | SWORD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FOREST | | | | | | | | | | | | | | | |
| MOUNTAIN | | | | | | | | | | | | | | | |
| CAVES | | | | | | | | | | | | | | | |
| SWAMP | | | | | | | | | | | | | | | |
| LAKE | | | | | | | | | | | | | | | |
| MEDUSA | | | | | | | | | | | | | | | |
| BEELZEBUB | | | | | | | | | | | | | | | |
| HYDRA | | | | | | | | | | | | | | | |
| VAMPIRE | | | | | | | | | | | | | | | |
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| POISON | | | | | | | | | | | | | | | |
| EVIL SPELL | | | | | | | | | | | | | | | |
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| WHO | DIRECTION | LOCATION | WHAT WITH |
|---|---|---|---|
| MEDUSA | | | |
| BEELZEBUB | | | |
| HYDRA | | | |
| VAMPIRE | | | |
| GORGON | | | |

# ARE YOU OUT OF THIS WORLD?

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**SILVERSOFT**

THE
IT'S CHRISTMAS AND THE PROGRAMMER'S NEPHEW IS VISITING.
JUST TIME TO TRY OUT THIS NEW CARTRIDGE
HUH!
THERE'S SOMETHING ON THE SCANNERS CAPTAIN CROCK.
GIVE US A VISUAL MR SMOCK.
Fire!
WHAM!
BACK AT THE MICRO..
STAND BY FOR MISSILE BLAST CAPTAIN.
WAIT FOR IT!
SPRINGY TOY
THUNK!
SSSSSS!
PING!
SQUIDGY TOMATO
THUD!

BUGS
HMMMM! A CLINGON. THEORIES MR SMOCK.
SHUT UP SPOTTIE. READY MR CHECKOUT...
I'LL NO BE RESPONSIBLE FOR THE CONSEQUENCES CAP'N
DEFINITELY IN BREACH OF THE ROMULAN TREATY. WE'LL HAVE TO OPEN FIRE CAP'N
THE WEAPON SYSTEM GOES INTO ACTION!
BASH!
SNAP!
BUG BITABLE THREAD.
WHIZZZ!
DETAIL (ESSENTIAL COMPONENT) THREAD TIED TO RULER.
WHOOOSH!
NAIL.
KLUNK!
SPROINGLE!
RUMBLE!
THIS I'VE GOT TO SEE
WHEEEE!
DUCK!
I TOLD YOU WE SHOULD HAVE RAISED THE SHIELDS CAPTAIN!

# The Biggest Games Factory in the World

**More games ideas are suggested, investigated and discarded at the Atari research and development complex at Sunnyvale in California than anywhere else on this planet. Eugene Lacey looks at the way the games are thought up, the processes they go through and why the ideas that survive have to be among the best around**

The biggest games factory in the world is to be found at Sunnyvale, California, on the west coast of America.

That's the home of Atari's video games design plant where a team of over one hundred programmers, designers, and artists work unceasingly thinking up new ideas for/and developing video games.

The man responsible for running the whole operation is 37-year-old Condon Brown.

While many of you were asleep in your beds *Computer and Video Games* spoke by telephone to the man behind the games.

Fifteen years of experience in the computer business, that involved working as a programmer and eventually running his own consultancy, led Condon to be offered what many people consider as the top job at Atari one-and-a-half years ago.

"We eat, sleep, and breathe games at Sunnyvale . . . and it's not just at work . . . I seem to spend a lot of time at the breakfast table discussing a game . . . or some part of a game with my wife."

Does she ever get sick of it? Loud laughter. "Just occasionally."

The game design process is a mixture of formal, and informal discussion, involving a set team of people and a floating pool of specialists.

Brown sees three main categories of game: The coin operated arcade game conversions, such as Pac Man and Space Invaders, licensed games where the company buys the rights to use a well known character or story line, and totally original games thought up by Atari's designers.

Atari keep the numbers of games they have sold a very closely guarded secret though it is known that the arcade conversions are the best sellers. Pac Man is the most successful to date and is thought to have sold more than 10 million copies world wide.

Brown believes that the penchant for arcade conversions will not always be what the public wants and that the original games will become more popular.

To find good original ideas he arranges "brainstorming sessions" to attempt to tease out an idea from a group discussion. Between eight and 10 designers and programmers attend the meetings. "I use the terms designer and programmer interchangeably . . . we try to set a theme for the meetings. It might be space adventure, maze, children's, or action games. These session can last anything from 1½ hour to all afternoon. Apart from time, place and theme we try to keep it informal."

Brainstorming sessions are an important part of the games factory output though Brown also stresses the importance of the individual flash of inspiration, "as many ideas come purely from one person as do from the brainstorming sessions".

Brown would like to see the whole company involved in the origination of new games process: "I regard the wider company as a potentially untapped resource."

Although the original games are often the most time consuming licensed titles and arcade conversions also present difficulties.

"We have to work within the limitations of the hardware — which usually means within the confines of the Atari VCS. Unlike the arcade machines which can constantly be improved in terms of their capabilities the VCS always remains the same.

"There is also the problem of trying to decide how licensed titles like *ET & Raiders of the Lost Ark* for example can best be used."

When Atari are convinced that an idea for a game is a good one the project is then handed down to a Cluster Group.

Each cluster group is made up of between five to eight people under the control of the cluster leader who in turn is responsible to Condon Brown.

Before an idea is assigned to a certain Cluster Group to turn it into a game a detailed Story Line and description of the game has to be produced for management approval.

This will contain detailed description of the gameplay, difficulty levels, and graphics together with precise market research to describe exactly whom the company believes will buy the game and why.

The next stage is to decide on a time scale for the completion of the project. This has to be flexible and games have taken from as little as five weeks to a year and a half to get into the shops. It is not only unforeseen technical difficulties that can put a project back — Atari also give careful thought to when is the right moment to put any given game on sale.

"We have to ensure that there is not a glut of games at one point in the year and a shortage at another."

There are usually as many as 10 games being developed at the same time though not all of these are destined to go into full scale production.

The cluster groups are teams made up of various specialists: a sound engineer who works on sound effects, a graphic artist who works with the programmers, and a composer to make up musical jingles, theme pieces for the games. There are also individual specialists whom the cluster can seek advice from on any point.

These specialists often have long term projects of their own but are regarded as a shared resource by the cluster groups.

When a project is underway its progress is constantly monitored by the cluster leader. "There is lot of input into the group . . . particularly from software marketing . . . but the final responsibility for what the game will be like rests with the designers."

Condon Brown stresses the team approach to design but also believes that there is room within the structure for designers who prefer to work by themselves. He cites the case of Howard Warsaw who developed the *Raiders of the Lost Ark* game by himself. In an earlier interview Warsaw told *C&VG* how he worked out the conversion of the film into a video game after sitting through four screenings of the film.

The quality of Atari's games, like that of any other video game manufacturer, depends on the strengths of the design team. One thing, Brown has to come to terms with, is the tremendous amount of poaching that goes on in the industry.

"We pay very well and generally have the pick of the industry."

He does not believe there is any set type of designer that fits into the Atari mould. "They come from many different walks of life . . . and range from 17-year-olds to PHD's . . . the one thing they all have in common is an abiding fascinating and love for computers."

"We try to select people with a proven track record and would normally expect some knowledge of advanced languages such as assembler language, and sequential processes . . . it is not important for a good designer to have a strong mathematics background."

The advanced knowledge the designers attain in the existing range of Atari computers means that their opinions are highly valued by the hardware researchers. "Because they have to work within the confines of set system they quickly start to think how much more they could put into a game if the computer had extra capacity in certain areas."

The conversion of games is a recent problem for the designers and a feasibility study has to be produced as early as possible in the development of the game if it is likely that Atari would want to market the game for other computer systems.

Not only games for specific systems but games for specific parts of the world designed to cater for the different culture and tastes.

The first of these games Astrisk and Obelisk was currently being under development when we spoke to Condon Brown. "It's based on the cartoon characters and is designed with the European market where they are particularly popular. It will be test launched in France later this year."

With several million Pac Man, Space Invaders, Galaxians and others too numerous to mention now in millions of homes there can be little doubt that the Sunnyvale plant is quite definitely the biggestgames factory in the world.

And what does the man in charge of it all like to do to relax? "I enjoy a game of Defender". Careful with those smart bombs Condon.

# Presentation on the

## Malcolm Evans gets things moving

**Malcolm Evans of New Generation Software probably knows the Spectrum as well as anyone.**

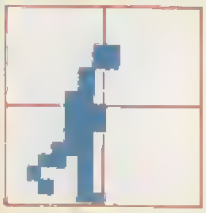
**Here, Malcolm gives you the benefit of all that experience as he undertakes to get a little animation going on the Spectrum.**

ILLUSTRATION 1

*Illustration one shows two characters which form a larger figure.*

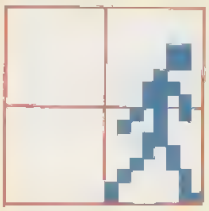
*Illustration two then gets him moving through four walking positions.*

ILLUSTRATION 2

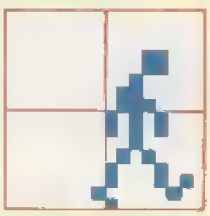


Position 1

Position 2



Position 3



Position 4

Although the Spectrum has a character set fixed in its ROM, certain ASCII codes are not assigned to a particular character.

These can be defined by the user to be any chosen character and can then be printed either by entering graphics mode and using one of the letters from A to U, or by printing the character using CHR$ which will output the specific ASCII code.

There are 20 user definable characters on a Spectrum and they occupy ASCII codes 144 to 164.

If you type PRINT USR("A") the machine will give the location of the first byte of graphics data. The first 8 bytes including that one will hold the data for the first character and so on. There are 20 characters which is 160 memory locations.

To calculate the actual data for the characters, you first need to design it on a piece of 8x8 squared paper. Each of the 64 squares can either be coloured in or left unshaded.

When you have finished designing your character you need to convert each horizontal row of coloured and empty squares into a binary number. To do this use the BIN function. Use a 1 for each coloured square and a 0 for each unshaded square. When you have your eight binary numbers then you simply poke the data into the memory like this ...

```
POKE USR("A"),BIN 10100010
POKE USR("A")+1,BIN 10001100
POKE USR("A")+2,BIN 01101100
```

And so on until you have poked in all 8 rows. This will continue until you reach USR("A")+7.

This defines user defined graphic character A. To define any others simply use USR("B"), then USR("C"), and so on.

This article outlines the use of user defined graphics, to achieve smooth animation to enhance the graphics in your own programs, and continues to show how to extend the user defined graphic symbols far beyond the 21 characters in the Spectrum specification.

Pages 92-93 of the Spectrum manual outline the use of user defined graphics characters.

It is simple to combine such defined characters to form a larger figure. Figure 1 shows two such characters arranged to produce the figure of a walking man. If we were to draw such a figure on the screen and attempt to move it to the right it would appear to hop. Listing 1 shows a program to do just this.

Ideally we need to draw the figure moving smoothly across the character boundaries. This we can do by adding intermediate figure positions using four characters (2 wide by 2 high). Even when the figure is within the pair of characters, 4 are still necessary since a trailing pair of characters is required to blank out the remains of the figure as it is moved forward to the next character position on the screen.

Listing 2 shows one way of achieving the required animation. Lines 10-70 convert the picture data into the user defined graphics A-P.

Another graphics character has been introduced to provide a ground plane. They have been entered in this manner so that it is easy to modify the pictures at any time. Line 1030 draws the four characters that make up the man quickly. There are two FOR-NEXT loops. N determines which of the four intermediate pictures is to be drawn, and M the position across the screen.

Using a similar method, it is possible to animate the figure to move in any direction. Each direction requires further User defined graphics characters. Since we have already taken up 17 of the 21 available, we must find some way of extending the capabilities of the Spectrum.

The beginning of the character set used by the Spectrum system is pointed to by a system parameter called CHAR$ at location 23606 and 23607.

This good piece of foresight of the Spectrum programmers allows the user to POKE into these locations to produce new character sets.

Listing 3 introduces another six characters to provide the pictures of the man falling. Since the size of the figure is one character wide and two high, by previous arguments it is necessary to use a set of characters three high to move the figure up or down. These additional characters are available since CHAR$ has been POKED to 30208 (location 23607 having been POKED to 118). The first usable character (CHr$ 32) is at 30464. Only two intermediate positions are provided this time to speed up the fall rate.

To add some humour (even if it is sick) lines 1100-1240 have been introduced to complete the demonstration loop. The POKE at line 1200 is to amend the scroll count SCR CT to ensure that the subsequent prints of chan$ 36 (a blank) result in the screen being scrolled.

When you press BREAK to leave the loop you will still be in the alternative character set. Don't panic. Simply poke 23607,60, trying to ignore the gibberish that the basic system puts onto the screen, and the system will regain some form of intelligence.

# SPECTRUM

```
  1 REM "graphics 3"- man falli
ng
 10 FOR n=0 TO 183
 20 READ d: POKE 30464+n,d: NEX
T n
 30 DATA 0,0,0,1,1,2,2,6,0,0,0,
128,128,0,0,0,7,7,6,14,26,34,18,
3,0,0,0,0,0,0,0,0: REM position
1
 40 DATA 0,0,0,0,0,0,0,0,0,0,0,
96,96,128,128,128,0,0,0,0,1,1,2,
1,192,192,128,128,128,128,192,0:
 REM position 2
 50 DATA 0,0,0,0,0,0,0,0,0,0,0,
24,24,32,96,112,0,0,0,0,0,0,1,0,
168,168,32,80,136,138,4,128: REM
 position 3
 60 DATA 0,0,0,0,0,0,0,0,0,0,0,
6,6,8,28,26,0,0,0,0,0,0,0,42,7
2,24,20,36,66,130,131: REM posit
ion 4
 70 DATA 255,0,0,0,0,0,0,0
 80 DATA 0,0,0,0,0,0,141,78,84,
56,56,16,16,48,48,112,80,80,152,
128,0,0,0,0,0: REM position f1
 90 DATA 0,0,0,0,0,0,0,0,0,0,0,14
1,78,84,56,56,16,16,48,48,112,80
,80,152,128: REM position f2
800 POKE 23607,118
900 FOR x=0 TO 30
910 PRINT AT 9,x;CHR$ 48: NEXT
x
1000 LET z=31
1010 FOR m=0 TO 30: FOR n=0 TO 1
5 STEP 4
1020 PAUSE 5
1030 PRINT AT 7,m;CHR$ (32+n);CH
R$ (33+n);AT 8,m;CHR$ (34+n);CHR
$ (35+n): NEXT n: NEXT m
1040 FOR y=7 TO 18: FOR n=0 TO 3
 STEP 3
1050 PAUSE 1
1060 PRINT AT y,31;CHR$ (49+n);A
T y+1,31;CHR$ (50+n);AT y+2,31;C
HR$ (51+n): NEXT n: NEXT y
1100 FOR n=0 TO 1: PAUSE 1: FOR
n=0 TO 1-n
1110 PRINT AT 19+n,31;CHR$ (49+n
*3)
1120 FOR y=z TO z-9 STEP -1
1130 PRINT AT 21,y; INK 2;CHR$ 4
8  NEXT y
1140 LET z=y: NEXT m: NEXT n
1150 PRINT AT 21,0; INK 2;CHR$ 4
8; INK 2;CHR$ 48;AT 20,31;CHR$ 3
5;AT 21,31;CHR$ 35
1200 POKE 23692,13
1205 FOR n=0 TO 11
1210 PRINT CHR$ 35: NEXT n
1220 FOR n=22816 TO 22848
1230 POKE n,56: NEXT n
1240 GO TO 1000
1900 REM  POKE 23607,60  to get
back to original character set
  1 REM "graphics 1"- man
 10 FOR n=0 TO 15
 20 READ d: POKE USR "a"+n,d: N
EXT n
 60 DATA 0,0,0,BIN 00000110,BIN
 00000110,BIN 00001000,BIN 00011
100,BIN 00011010,BIN 00101010,BI
N 01001000,BIN 00011000,BIN 0010
0100,BIN 00100100,BIN 01000010,B
IN 10000010,BIN 10000011
1020 FOR n=0 TO 30
1030 PRINT AT 7,n;" ";CHR$ 144,A
T 8,n;" ";CHR$ 145: PAUSE 5: NEX
T n
  1 REM "graphics 2"- man walki
ng
 10 FOR n=0 TO 135
 20 READ d: POKE USR "a"+n,d: N
EXT n
 30 DATA 0,0,0,1,1,2,2,6,0,0,0,
128,128,0,0,0,7,7,6,14,26,34,18,
3,0,0,0,0,0,0,0,0: REM position
1
 40 DATA 0,0,0,0,0,0,0,0,0,0,0,
96,96,128,128,128,0,0,0,0,1,1,2,
1,192,192,128,128,128,128,192,0:
 REM position 2
 50 DATA 0,0,0,0,0,0,0,0,0,0,0,
24,24,32,96,112,0,0,0,0,0,0,1,0,
168,168,32,80,136,138,4,128: REM
 position 3
 60 DATA 0,0,0,0,0,0,0,0,0,0,0,
6,6,8,28,26,0,0,0,0,0,0,0,42,7
2,24,20,36,66,130,131: REM posit
ion 4
 70 DATA 255,0,0,0,0,0,0,0
900 FOR x=0 TO 30
910 PRINT AT 9,x;CHR$ 160: NEXT
x
1010 FOR m=0 TO 30: FOR n=0 TO 1
5 STEP 4
1020 PAUSE 5
1030 PRINT AT 7,m;CHR$ (144+n);C
HR$ (145+n);AT 8,m;CHR$ (146+n);
CHR$ (147+n): NEXT n: NEXT m
```

# PUZZLING

## PUZZLE PROG

*This very basic computer program which, with very little adaptation, should run on most machines, asks you to sort out a tangled mess into four eight-lettered words.*

*At present the letters are stored in pairs in an array and you could, of course, produce the words:*

*COLOSSAL*
*CRIMINAL*
*COMPUTER*
*CALAMITY*

*on your screen just by changing the order of the pairs in the DATA statement.*

*This is definitely NON-U and is frowned upon. Anybody who would sink that low would never reach their keyboard again!*

*You are invited having typed in the program, to RUN it; your screen should produce the array:*

| | | | |
|---|---|---|---|
| SS | MI | AL | IN |
| LO | CO | CA | IM |
| UT | AL | TY | ER |
| MP | CO | CR | LA |

*At each turn enter three INPUTS; A and B give the column and row of the array pair to be moved and C the particular kind of switch you wish to make. C can have the value 0, 1 or 2.*

*Just how the switches are made is for you to work out — either by trial or by a study of the program. To save typing little or no error trapping routines are included so expect the worst if you try to put in illegal quantities.*

*Just how few moves are needed to form the four words — ah, there's the puzzle!*

```
10 DIM A$ (4,4)
20 FOR J= 0 TO 3
30 FOR K= 0 TO 3
40 READ A$(J,K)
50 PRINT TAB (4*J, 4*K) A$(J,K)
60 NEXT K
70 NEXT J
80 DATA SS, LO,UT,MP,MI,CO,AL,CO,AL,CA,TY,CR,IN,IM,ER,LA
90 PRINT: PRINT
100 INPUT A,B,C
110 M$= A$(A,B)
120 IF C=0 THEN A$(A,B)= A$(3– A,3– B) : A$(3– A,3– B)= M$: GOTO170
130 IF C=1 THEN A$(A,B)= A$(B,A): A$(B,A)=M$: GOTO170
140 D=A+1 : IF D>3 THEN D=4–D
150 E=B–1 ; IF E>0 THEN E=4+E
160 A$(A,B)=A$(D,E): A$(D,E)=M$
165 ***REM Whatever you need to CLEAR THE SCREEN HERE ***
170 FOR J = 0 TO 3
180 FOR K= 0 TO 3
190 PRINT TAB (4*J, 4*K)A$(J,K)
200 NEXT K
210 NEXT J
220 GOTO 90
```

● *Note: $=string sign*

## DUCKSHOOT

*McCoy's, despite the name, is probably the cheapest software house ever to rent an accommodation address in downton Dorking.*

*Indeed, the most expensive part of all their products is the cassette holder.*

*Still, their fairground replica does actually run although the ducks don't even waddle and only three players can fire their six shots before the inevitable program crash.*

*It so happened that Nigel, Jane and Tracey in their first attempt managed to hit one duck with each shot; the bird, quite properly, disappearing from the screen. After the final shot had demolished the eighteenth duck the display briefly showed that they had each scored the same total before all went blank.*

*If Tracey hit more 20's than Nigel who hit more 10's than Jane you can work out which six ducks each shot, can't you?*

Five of the most powerful and influential beings in the galaxy meet on board the orbiting space station of Far Funus.

Their declared intention is to bring peace to the galaxy by settling their differences, over the negotiating table, diplomatically Secretly, each of these warlike beings hopes to outwit the other four and seize control of the galaxy for his empire once and for all.

There's Bezel from the Pirate Empire resplendent in his burgundy and magenta robes but a creature none of the others would trust as far as they could have thrown his feared and awesome ship, the good vessel Vespozian.

Illustration Stephen Gulbis

# INTERSTELLAR INTRIGUE

## Negotiate and manoeuvre your way to control of the galaxy

By Mike Singleton

All of the others are at a disadvantage when haughty Shazaz-Ka looks them in the eye. They dare not return the stare of this subtle diplomat from the powerful Sun Empire, for fear of being permanently blinded. He uses this advantage sparingly but his terrible frown falls most regularly on the ill-mannered Bezel.

In contrast, the brutish gesturing and roaring from infamously ill-tempered Tiaithan Lizard delegate Maachen, threatens to disrupt the proceedings at every turn. The others excuse his behaviour by making allowances for his being out of his natural amphibious environment but they are not so quick to dismiss the threat his numerous blue-emblemed Water Empire forces pose.

No-one has ever discovered the name of the anonymous Ice Warrior, whose features remain hidden behind a glacier mask and whose grating voice is disguised by the crackling breathing apparatus that serves him on this mission. He represents the weak and much-scattered Dead Empire, whose voice at these proceedings is only heard because no other empire can take control of the inhospitable planets and dying stars where they live.

But while they look down on the primitive resources of the Dead Empire and the irony that these most lifeless of beings have chosen vibrant green as the distinguishing colour of their poorly-equipped fleets, the others keep one wary eye on his ice-axe. And all know the value of an ally capable of inhabiting planets where no-one else can visit — let alone live.

Lastly comes Grakta of the Bloodline Empire. Traditionally the rulers of this galaxy and let none estimate his cunning which is the result of 27 generations of careful cloning.

His power relies on the Bloodline's long control of the stellar energy, but now it is under fierce attack from all sides — yet knowing Grakta he may still win the day.

The five are sat around a board, with their base stars, outlying stars and fleets on it. As the fortunes of galactic war ebb and flow before them they argue, connive, ally and betray to gain the upper hand for their respective empires.

Any is capable of wresting complete control, but each must use the others in brief alliances, all will try to prevent any other from becoming too powerful. It's diplomacy on a cosmic scale for two-five players and no holds are barred.

## TURNS

Players take it in turn to make their moves. The order of play is decided randomly by the computer at the beginning of the game. For each star a player owns at the beginning of his turn, he gets one movement point.

During his turn he uses these movement points in moving fleets, rotating fleets and firing at other fleets.

The player does not have to use all his movement points and in fact can use none if he so wishes. Movement points, however, cannot be "saved up" for the next turn. If they are not used, they are lost.

A player with no movement points misses his turn. This does not necessarily mean he is out of the game. If he still has some fleets left, the actions of another player may still enable him to capture a star without even moving and then he will find himself back in the game!

## MOVING A FLEET

Moving a fleet one space costs one movement point. A fleet can only move into an adjacent empty space. A fleet must move forward, left or right.

It cannot move backwards. Once it has moved, it will be pointing in the direction it travelled. A player, of course, can only move his own fleets.

New fleets can be created at stars a player owns. To bring a new fleet into existence, the player simply makes a move from the star into an adjacent empty space. This move can be in any of four directions, north, east, south or west.

## ROTATING A FLEET

Rotating a fleet costs one movement point. The fleet can rotate through 90 or 180 degrees. When rotating, the fleet remains in the same space and simply changes direction. To rotate a fleet, the player must own it.

## FIRING AT A FLEET

Firing at a fleet costs one movement point. A player can fire from any star or fleet he owns at a fleet in an adjacent space. If he fires from a star, he can fire north, south, east or west. If he fires from a fleet, he must fire in the direction the fleet is pointing. The target fleet is always destroyed, even if it belongs to the player himself! Stars cannot be fired at or destroyed.

## CHANGE OF OWNERSHIP

Ownership of a fleet or star can change as a result of movement, rotation or firing. It always depends on the new situation created by a player's action and any changes of ownership take effect immediately.

Ownership is determined by the fleets "attacking" that star or fleet. A fleet is said to be attacking another fleet or star when:

1) It is adjacent to that fleet or star.
2) It is pointing directly at that fleet or star.
3) If it is attacking a fleet, the two fleets **are not** pointing towards each other. A fleet cannot attack a fleet that is pointing towards it. Therefore, fleets pointing towards each other do not affect each other.

The following rules govern the ownership of stars and fleets:

1) If no fleets are attacking, ownership of a fleet or star does not change.
2) If there are ONLY neutral fleets attacking it, the fleet or star becomes neutral itself.
3) If each of the attacking players has an equal number of fleets attacking it, the fleet or star becomes neutral.
4) If any player has more fleets attacking it than any other player, then the star or fleet is captured by that player and becomes his star or fleet.
5) Neutral fleets are only counted as attacking fleets if no other players' fleets are involved.

Each move a player makes involves a potential change in ownership of surrounding fleets and stars. In certain situations, chain reactions can occur. Imagine, for example, a line of fleets pointing towards each other. If ownership of the first fleet in the line changes, this will cause ownership of the next to change and then the next again. Such changes take effect **immediately**, not just at the end of a player's turn.

## DURING MOVEMENT OF A FLEET

1) Removes fleet from map. Checks for changes.
2) Puts fleet in new position. Checks for change in ownership of that fleet.
3) Checks for changes in ownership of newly attacked fleet or star and any connected fleets.

## DURING ROTATION OF A FLEET

1) Rotates fleet. Checks for change in ownership of the star or fleet that **was** under attack.
2) Checks for change in ownership of rotated fleet.
3) Checks for change in ownership of newly attacked fleet or star.

## AFTER FIRING

1) Check for change in ownership of fleet or star that the destroyed fleet **was** attacking.

All checks for changes in ownership always involve a check on any connected fleets or stars, so chain reactions may occur in any stage of the checking.

## WINNING

The object of the game is to bring peace to the galaxy. The winner, therefore is the only player left who can make a move. To win, you must leave the other players with no stars and thus no movement points.

## THE CONTROLS

**C = CHOOSING**
**M = MOVING**
**R = ROTATING**
**F = FIRING**
**E = END YOUR TURN**
**S = SAVE THE GAME ON TAPE**

CURSOR KEYS are used for direction of movement, rotation or firing. They are also used to control the movement of the square cursor during the CHOOSING option.

In the CHOOSING option you can move the square cursor to any fleet or star you own. You can also choose any of the other options. When you choose to move, rotate or fire, the fleet or star will begin to flash. Then you press a direction key and the action will occur. You return to CHOOSING automatically after rotation or firing but during MOVING you must return by pressing C.

E enables you to end your turn at any stage. But only when CHOOSING.

S enables you to save the game on tape at any stage. When loaded back in, the program will recreate the exact conditions that held when you pressed S. All you need to do after pressing S is give the saved game a filename.

## FOR 2-5 PLAYERS. RUNS ON SPECTRUM IN 16K.

Illustration: Stephen Gulbis

```
 1 DIM p$(6,10)
 2 DIM x(4)  DIM y(4)  DIM m(7)
 DIM w(7)
 3 LET x(1)=-1  LET y(1)=0
 4 LET x(2)=0  LET y(2)=1
 5 LET x(3)=0  LET y(3)=-1
 6 LET x(4)=1  LET y(4)=0
10 GO SUB 600
11 GO SUB 140
12 GO SUB 100
13 GO SUB 110
14 GO SUB 130
15 GO SUB 150
16 GO SUB 190
17 PAPER 0  BRIGHT 1  BORDER 0
LS
18 GO SUB 160
19 LET p=2  LET lp=1
20 LET m=m(p)  IF m=0 THEN  GO
TO 23
21 GO SUB 170  GO SUB 200  IF
i$="s" THEN  GO TO 30
22 LET lp=p
23 LET p=p+1  IF p=7 THEN  LET
p=2
24 GO TO 20
27 REM ----------
28 REM save game on tape
29 REM ----------
30 INPUT "SAVING! GAME NAME =
";f$  IF LEN f$>10 THEN  GO TO 3
0
31 SAVE f$ LINE 40
32 GO TO 21
97 REM ----------
98 REM autostart saved game
99 REM ----------
40 PAPER 0. BRIGHT 1  BORDER 0
CLS
41 RESTORE  GO SUB 100  GO SU
160
42 GO TO 21
97 REM ----------
98 REM read in graphics data
99 REM ----------
100 FOR b=0 TO 159. READ n  POK
 USR "a"+b,n  NEXT b  RETURN
107 REM ----------
108 REM read in block data
109 REM ----------
110 FOR b=1 TO 7  FOR y=1 TO 2
READ b$(b,y)  NEXT y. NEXT b  R
ETURN
117 REM ----------
118 REM print block
119 REM ----------
120 INK c  PRINT AT y*2,x*2-2,b
$(b,1)  PRINT AT y*2+1,x*2-2,b$(
,2)  RETURN
127 REM ----------
128 REM read in start positions
129 REM ----------
130 FOR c=2 TO 6. READ x,y: LET
s$(x,y)="5"  IF m(c)=0 THEN  GO
TO 132
131 LET c$(x,y)=STR$ c
132 NEXT c. RETURN
137 REM ----------
138 REM set up arrays
139 REM ----------
140 DIM b$(7,2,2)
141 DIM s$(16,10)
142 DIM c$(16,10)
145 FOR x=1 TO 16  LET s$(x)="6
666666666"  LET c$(x)="777777777
7"  NEXT x  RETURN
147 REM ----------
148 REM generate starmap
149 REM ----------
150 FOR s=1 TO 25
151 LET x=1+INT (RND*16)  LET y
=1+INT (RND*10)  IF s$(x,y)<>"6"
THEN  GO TO 151
152 IF x>1 THEN  IF s$(x-1,y)<>
"6" THEN  GO TO 151
153 IF x<16 THEN  IF s$(x+1,y)<
>"6" THEN  GO TO 151
154 IF y>1 THEN  IF s$(x,y-1)<>
"6" THEN  GO TO 151
155 IF y<10 THEN  IF s$(x,y+1)
>"6" THEN  GO TO 151
156 LET s$(x,y)="5". NEXT s. RE
TURN
157 REM ----------
158 REM print starmap
159 REM ----------
160 FOR y=1 TO 10. FOR x=1 TO 1
6  LET b=VAL s$(x,y). LET c=VAL
c$(x,y)  GO SUB 120. NEXT x. NEX
T y  RETURN
167 REM ----------
168 REM print title & player
169 REM ----------
170 BORDER p  PAPER p  INK 0. B
RIGHT 0  PRINT AT 0,0,p$(p),"
                    INTERSTE
LLAR  INTRIGUE  "
171 PRINT AT 0,23,"MOVES= ",m
INPUT ""
172 IF lp<>p THEN  PAPER 0  BRI
GHT 1  RETURN
173 PRINT AT 0,10; FLASH 1, PAP
ER 0, INK 7, BRIGHT 1,"  WINNER
  "
174 FOR k=1 TO 50  BEEP .1,9  B
EEP .1,12: NEXT k
175 GO TO 175
177 REM ----------
178 REM flash block & key test
179 REM ----------
180 FLASH 1  LET c=p. LET b=VAL
s$(x,y): GO SUB 120
181 LET i$=INKEY$  IF i$="n" OR
i$="f" OR i$="m" OR i$="r" OR i
$="e" THEN  RETURN
182 GO TO 181
187 REM ----------
188 REM generate neutral fleets
189 REM ----------
190 FOR s=1 TO 70
191 LET x=1+INT (RND*16). LET y
=1+INT (RND*10). IF s$(x,y)<>"6"
THEN  GO TO 191
192 LET b=1+INT (RND*4). LET nx
=x+x(b)  LET ny=y+y(b). IF nx=0
OR nx=17 OR ny=0 OR ny=11 THEN
GO TO 194
193 IF c$(nx,ny)<>"," THEN  LET
b=5-b
194 LET s$(x,y)=STR$ b. NEXT s
RETURN
197 REM ----------
198 REM select move location
199 REM ----------
200 LET x=8: LET y=5
201 PRINT AT 0,10, FLASH 1, PAP
ER 0, INK 7,"  CHOOSING  "  BEEP
.5,9
202 GO SUB 500
205 IF i$="m" THEN  GO SUB 250
206 IF i$="r" THEN  GO SUB 300
207 IF i$="f" THEN  GO SUB 350
210 IF i$="e" OR i$="s" THEN  R
```

```
ETURN
 220 GO TO 201
 247 REM ----------
 248 REM move fleet
 249 REM ----------
 250 FLASH 1  PRINT AT 0,10, PAP
ER 0, INK 7;"MOVING FLEET"
 251 LET i$=INKEY$  IF (i$<"5" O
R i$>"8") AND i$<>"c" THEN  GO T
O 251
 252 IF i$="c" THEN  RETURN
 253 LET i=VAL i$-4
 254 LET nx=x+x(i). LET ny=y+y(i
)  IF nx=0 OR nx=17 OR ny=0 OR n
y=11 THEN  GO TO 251
 255 IF s$(nx,ny)<>"6" THEN  GO
TO 251
 256 IF b=5 THEN  FLASH 0  GO SU
B 120  GO TO 261
 257 IF i+b=5 THEN  GO TO 251
 258 LET ob=b. FLASH 0  LET c=7
 LET b=6  GO SUB 120
 259 LET c$(x,y)="7"  LET s$(x,y
)=STR$ b
 260 LET b=ob  GO SUB 400
 261 LET x=nx  LET y=ny  LET c=p
  LET b=i  FLASH 1  GO SUB 120.
LET c$(x,y)=STR$ c  LET s$(x,y)=
STR$ b
 262 GO SUB 401  LET x=nx: LET y
=ny: LET c=VAL c$(x,y)  LET b=i
 263 GO SUB 400
 268 FLASH 0  LET m=m-1  PRINT A
T 0,30, BRIGHT 0, PAPER 0, INK 0
,m," "
 269 BEEP .4,12
 270 IF m=0 THEN  LET i$="e"  FL
ASH 0  GO SUB 120. RETURN
 275 IF c$(x,y)<>STR$ p THEN  FL
ASH 0  GO SUB 120. RETURN
 280 GO TO 251
```

```
 297 REM ----------
 298 REM rotate fleet
 299 REM ----------
 300 FLASH 1: PRINT AT 0,10, PAP
ER 0, INK 7;"  ROTATING "
 301 LET i$=INKEY$. IF (i$<"5" O
R i$>"8") AND i$<>"c" THEN  GO T
O 301
 302 IF i$="c" THEN  BEEP .5,9:
RETURN
 303 LET i=VAL i$-4  IF i=b THEN
  GO TO 301
 304 LET ob=b  FLASH 0  LET b=i
 GO SUB 120  LET s$(x,y)=STR$ b
 LET b=ob  GO SUB 400  LET b=i
GO SUB 401. GO SUB 400
 305 LET m=m-1  PRINT AT 0,30, B
RIGHT 0, PAPER 8, INK 0,m," "
 306 BEEP .4,12
 307 IF m=0 THEN  LET i$="e"
 308 RETURN
 347 REM ----------
 348 REM fire at fleet
 349 REM ----------
 350 FLASH 1  PRINT AT 0,10, PAP
ER 0, INK 7,"  FIRING  "
 351 LET i$=INKEY$  IF (i$<"5" O
R i$>"8") AND i$<>"c" THEN  GO T
O 351
 352 IF i$="c" THEN  BEEP .5,9
RETURN
 353 LET i=VAL i$-4  IF b<>5 AND
 i<>b THEN  GO TO 351
 354 LET nx=x+x(i)  LET ny=y+y(i
)  IF nx=0 OR nx=17 OR ny=0 OR n
y=11 THEN  GO TO 351
 355 IF s$(nx,ny)>"4" THEN  GO T
O 351
 356 LET ob=b  LET oc=c: LET ox=
x  LET oy=y  LET x=nx  LET y=ny
 357 FOR f=1 TO 10. BEEP .05,15
```

```
 BEEP .05,10  NEXT f
 358 LET i=VAL s$(x,y)  FLASH 0
 LET b=6. GO SUB 120. LET s$(x,
)="6"  LET c$(x,y)="0". LET b=i
 GO SUB 424
 359 LET c=VAL c$(x,y): GO SUB
20  LET m=m-1  PRINT AT 0,30,
IGHT 0, PAPER 8, INK 0;m," "
 360 IF m=0 THEN  LET i$="e"
 361 RETURN
 397 REM ----------
 398 REM check fleet or star
 399 REM ----------
 400 LET ox=x. LET oy=y  LET o
b  LET oc=c  GO TO 424
 401 LET ox=x  LET oy=y. LET ob
b  LET oc=c
 402 FOR k=2 TO 7  LET n(k)=0
EXT k  LET c1=0  LET c2=0  LET
n=0  LET hc=c  LET en=1
 403 FOR d=1 TO 4: IF d=b THEN
GO TO 410
 404 LET ax=x+x(d). LET ay=y+y(d
)  IF ax=0 OR ax=17 OR ay=0 OR
y=11 THEN  GO TO 410
 405 LET ab=VAL s$(ax,ay): IF d+
ab<>5 THEN  GO TO 410
 406 LET ac=VAL c$(ax,ay)  LET
ac)=n(ac)+1. IF n(ac)<hn OR ac=
7 THEN  GO TO 410
 407 IF n(ac)=hn THEN  LET en=1
 GO TO 410
 408 LET hn=n(ac)  LET hc=ac  LE
T en=0
 410 NEXT d
 411 IF en=0 THEN  GO TO 420
 412 IF hn>0 OR n(7)>0 THEN  LET
hc=7
 420 IF hc=c THEN  GO TO 430
 421 IF b=5 THEN  LET m(c)=m(c)-
1  LET m(hc)=m(hc)+1
```

## RUNS ON A BBC MODEL B. CONVERTED BY STEVE WILLIS

Loaded in two parts 1. "INTRIGE" 2. (loaded automatically by 1.) "INT#2"

The major problem with this conversion was the need to use the BBC MODE2 to gain the required colours for more than two players. Again this led to the further problem of needing 32 character width on a 20 character display.

The games uses all 32 characters, by displaying pair together, to give 16 large characters. Rearranging the characters to only use 16 meant a rather sick display. In the end I redesigned the Spectrum characters so that they can be overlapped.

This overlap is achieved by printing the left-hand character, then back spacing (using the VDU5 graphics motion of the cursor) by a character width. Finally the right-hand half of the character is printed. Thus 2 characters which would take 128 pixels (2x64) now take 96 pixels (64 − 32 + 64). With 1280 pixels across this still isn't enough.

By then reducing the 'used' amount of each character in the I direction to 5/8ths we further reduce the character to 80 pixels wide. This gives us 32 across! In the Y direction we have 32 available lines so there is no problem except to match the find shapes. This all sounds complicated but is achieved in the end by rewriting the character definitions in "INTRIGE" and then line 120 in "INT#2" does everything!

Now the second effect of using MODE2, is the lack of space available for variables; or to be more precise for string variables. This game in its original form used two large string arrays and this proved impossible on the BBC. This has been overcome by storing the display information, previously held in S$(X,Y) & C$(X,Y), by POKEing in the spare areas of the

```
   10MODE7
   20DIMP%(6),M%(7)
   30REM" **ENTER PLAYERS**"
   40CLS
   50PRINTTAB(0,2)CHR$(131)CHR$(
157)
   60FORI%=3TO4:PRINTTAB(0,I%)CH
R$(131)CHR$(141)CHR$(255)CHR$(25
5)CHR$(255)"      INTERSTELLAR INT
RIGUE      "CHR$(255)CHR$(255)CHR
$(255):NEXT
```

```
   70PRINTTAB(0,5)CHR$(131)CHR$(
157)
   80PRINT''TAB(4)" Designed by
Mike Singleton for"'':FORI%=6TO7
:PRINTTAB(7)CHR$(141)" COMPUTER
& VIDEO GAMES":NEXT:PRINT'''"  B
BC micro translation by Steve Wi
llis"
   90PRINTTAB(0,19)" THIS GAME C
AN BE PLAYED BY AS FEW AS"'" TWO
 PLAYERS, OR AS MANY AS FIVE."''
```

```
422 LET c=hc  LET c$(x,y)=STR$
c  FLASH 0  GO SUB 120. BEEP .3,
!7
423 IF b=5 THEN  GO TO 430
424 LET x=x+x(b)  LET y=y+y(b)
 IF x=0 OR x=17 OR y=0 OR y=11 T
HEN  GO TO 430
425 LET b=VAL s$(x,y)  IF b=6 T
HEN  GO TO 430
426 LET c=VAL c$(x,y)  GO TO 40
2
430 LET x=ox  LET y=oy  LET c=o
c: LET b=ob  RETURN
497 REM ----------------
498 REM cursor & key test
499 REM ----------------
500 FLASH 0  OVER 1  LET c=8  L
ET b=7  GO SUB 120
510 LET i$=INKEY$  IF (i$<"5" O
R i$>"8") AND i$<>"r" AND i$<>"m
" AND i$<>"f" AND i$<>"e" AND i$
<>"s" THEN  GO TO 510
515 IF (i$="5" AND x=1) OR (i$=
"8" AND x=16) OR (i$="7" AND y=1
) OR (i$="6" AND y=10) THEN  GO
TO 510
520 IF (i$="5" OR i$>"8") AND c
$<>STR$ p AND i$<>"e" AND i
$<>"s" THEN  GO TO 510
521 IF i$="r" AND s$(x,y)>"4" T
HEN  GO TO 510
525 GO SUB 120  OVER 0
526 IF i$="e" OR i$="s" THEN  F
LASH 0  RETURN
530 IF i$="5" OR i$>"8" THEN  L
ET b=VAL s$(x,y)  LET c=p. FLASH
1  GO SUB 120  BEEP .5,0  RETUR
N
540 LET i=VAL i$-4  LET x=x+x(i
)  LET y=y+y(i)  GO TO 500
597 REM ----------
598 REM enter players
599 REM ----------
600 DIM p$(6,10)  OVER 0. FLASH
0  BRIGHT 0  INK 7  PAPER 1  BO
RDER 1  CLS
```

```
 604 PRINT AT 0,3; INK 0, PAPER
6,"                    "
 605 PRINT AT 1,3; INK 0, PAPER
6," INTERSTELLAR  INTRIGUE "
 606 PRINT AT 2,3, INK 0, PAPER
6,"                    "
 610 PRINT   PRINT "Designed by
Mike Singleton for"
 615 PRINT   PRINT "    COMPUTER
 & VIDEO GAMES"
 620 PRINT AT 10,0,"This game ca
n be played by as  few as two p
layers or as many  as five. Ple
ase enter how many  are people a
re going to play."
 625 INPUT "Number of players =
";np  IF np<1 OR np<2 OR n
p>5 THEN  GO TO 625
 630 PRINT AT 10,0,"You have cho
sen a ";np;"-player game.Please
enter each player's name.Up to s
ix letters are allowed  for eac
h name.                "
 635 PRINT AT 15,0;
 640 FOR p=1 TO np
 645 INPUT "Player's name = ";n$
  IF LEN n$ > 6 OR n$="" THEN  GO
TO 645
 650 LET i=INT ( RND*5)+2  IF p$(
i)<>"                " THEN  GO TO 650
 655 LET p$(i)=n$  PRINT p$(i);"
 660 NEXT p
 665 PRINT   PRINT "Thinking... Pl
ease wait a moment."
 690 RETURN
4997 REM ----------
4998 REM graphic data
4999 REM ----------
5000 DATA 0,1,3,7,15,31,63,127
5010 DATA 0,128,192,224,240,248
,252,254
5020 DATA 254,252,248,240,224,1
92,128,0
5030 DATA 127,63,31,15,7,3,1,0
5040 DATA 0,1,3,7,15,31,63,127
```

```
5050 DATA 127,63,31,15,7,3,1,0
5060 DATA 0,128,192,224,240,248
,252,254
5070 DATA 254,252,248,240,224,1
92,128,0
5080 DATA 0,1,3,7,15,31,63,127
5090 DATA 127,63,31,15,7,3,1,0
5100 DATA 0,128,192,224,240,248
,252,254
5110 DATA 254,252,248,240,224,1
92,128,0
5120 DATA 0,1,3,7,15,31,63,127
5130 DATA 127,63,31,15,7,3,1,0
5140 DATA 0,128,192,224,240,248
,252,254
5150 DATA 254,252,248,240,224,1
92,128,0
5160 DATA 0,1,3,7,15,31,63,127
5170 DATA 127,63,31,15,7,3,1,0
5180 DATA 0,128,192,224,240,248
,252,254
5190 DATA 254,252,248,240,224,1
92,128,0
5200 DATA 0,1,3,7,15,31,63,127
5210 DATA 127,63,31,15,7,3,1,0
5220 DATA 0,128,192,224,240,248
,252,254
5230 DATA 254,252,248,240,224,1
92,128,0
5240 DATA 0,1,3,7,15,31,63,127
5250 DATA 127,63,31,15,7,3,1,0
5260 DATA 0,128,192,224,240,248
,252,254
5270 DATA 254,252,248,240,224,1
92,128,0
5280 DATA 0,1,3,7,15,31,63,127
5290 DATA 127,63,31,15,7,3,1,0
5300 DATA 0,1
5310 DATA 1,4
5320 DATA 16,4
5330 DATA 4,16
5340 DATA 18,10
```

computer where no Basic may venture.

For this I have used &AOO to &BFF and the program now PEEKs and POKEs these areas. The relationship is as follows:—

S$(X,Y) becomes ?(2816 + 10*X% + Y%)

C$(X,Y) becomes ?(2560 + 10*X% + Y%)

As X=16 & Y=10 are the maxima, one can calculate that there is an unused gap from 2731 to 2826. In fact these locations are used when saving a game (we will discuss this in a minute).

Thus the S$(X,Y) & C$(X,Y) strings have been replaced throughout and, as in all the games, X% & Y% etc. (integer variables) have been used. In fact as the data storage is numeric in the game this is more efficient than evaluating VAL (string) all the time as in the SPECTRUM version.

Now to SAVEing and LOADing games. SAVEing a game is achieved by storing a machine code dump of locations &AOO to &BAA in the file named "INTINT" on tape or disc. At the time a SAVE is requested, the player's names, number of moves allowed, and player colours are loaded as an ASCII dump into the spare area from 2731 to 2816 (lines 31 to 38). The whole data stream is then SAVEd.

The option of LOADing a saved game is selected at the start of the first program. If an "S" is entered instead of the number of players, then when the main program has loaded the player puts a previously saved game tape in the recorder and it will be loaded. The game is then running.

With tape storage several saved games can be stored on one tape or several tapes. However they are all called "INTINT" this could be modified if you wish quite simply. Both SAVE & LOAD work correctly to a disc system.

Finally PAGE has again been set to &1200 if a disc system interface is in use, or &EOO if not. This allows the use of MODE2 with disc versions of the game.

```
" PLEASE ENTER THE NUMBER OF PLA
YERS FOR"/" THIS GAME -      ( S
 FOR A SAVED GAME )"
  95INPUTTAB(13,23)" ",N$
  100IFN$="S"THEN N%="0" ELSE IF
VAL(N$)<2 OR VAL(N$)>5 THENVDU7:
GOTO90
  110VDU23,224,0,0,6,6,14,30,62,
62
  120VDU23,225,0,0,0,96,112,120,
124,124
```

```
  130VDU23,226,124,124,120,112,9
6,96,0,0
  140VDU23,227,62,62,30,14,6,0,0
,0
  150VDU23,228,0,15,31,31,63,63,
127,127
  160VDU23,229,0,240,248,248,252
,252,254,254
  170VDU23,230,127,127,63,63,31,
31,15,0
  180VDU23,231,254,254,252,252,2
```

```
48,248,240,0
  190VDU23,232,6,6,6,6,6,6,6,0
  200VDU23,233,240,240,240,240,2
40,240,240,0
  210VDU23,234,0,6,6,6,6,6,6,6
  220VDU23,235,0.240,240,240,240
,240,240,240
  230VDU23,236,0,0,0,0,0,126,126
,126
  240VDU23,237,126,126,126,0,0,0
,0,0
  250VDU23,238,0,0,0,0,0,252,252
,252
  260VDU23,239,252,252,252,0,0,0
,0,0
  270VDU23,240,255,128,128,128,1
28,128,128,128
  280VDU23,241,255,1,1,1,1,1,1,1
  290VDU23,242,128,128,128,128,1
28,128,128,255
  300VDU23,243,1,1,1,1,1,1,1,255
  305VDU23,244,255,255,255,255,2
55,255,255,255
  310P%=VAL(N$)
  320IFPAGE<>&E00THENPAGE=&1200
  330CHAIN"INT#2"
  340END
>LIST
   0MODE7
   1DIMP$(6),X%(4),Y%(4),N%(7),
M%(7),B$(7,2)
   2X%(1)=-1:Y%(1)=0:X%(2)=0:Y%
(2)=1:X%(3)=0:Y%(3)=-1:X%(4)=1:Y
%(4)=0
   3FORI%=11TO170:?(2816+I%)=0:
?(2560+I%)=0:NEXT
   4NP%=P%:GOSUB110:IFNP%=0THEN
GOTO40
   5FLASH=0
  10GOSUB600
  11GOSUB145
  14GOSUB130
  15GOSUB150
  16GOSUB190
  17REM**SCREEN COLOURS**
  18GOSUB160
  19P%=2:LP%=1
  20M%=M%(P%):IFM%=0THEN23
  21GOSUB170:GOSUB200:IFI$="S"T
HEN30
  22C%=0:B%=7:FLASH=0:GOSUB120:
LP%=P%
  23P%=P%+1:IFP%=7THENP%=2
  24GOTO20
  30MODE7:PRINTTAB(3,7)" THE GA
ME WILL BE SAVED WITH"'TAB(9)" T
HE NAME  INTINT"''" PLEASE START
 TAPE RECORDER AND WAIT"
  31?2816=NP%
  32FORI%=1TONP%:IF LEN(P$(I%))
```

```
<10 THEN P$(I%)=P$(I%)+STRING$(1
0-LEN(P$(I%)),"  "):NEXT
  33FORI%=2TO6:FORJ%=1TO10:?(27
31+J%+I%*10)=ASC(MID$(P$(I%),J%,
1)):NEXT:NEXT
  34?2802=LP%:?2803=P%:FORI%=2T
O6:?(2804+I%)=M%(I%):NEXT
  35*SAVE"INTINT" 0A00 +01AA 0A
00
  37PRINT''"   PLEASE STOP THE
TAPE RECORDER "
  38END
  40CLS:PRINTTAB(2,6)" POSITION
 THE FILE  INTINT , THEN"''"
PLEASE START THE TAPE RECORDER":
*LOAD"INTINT"
  41NP%=?2816
  42FORI%=2TO6:FORJ%=1TO10:P$(I
%)=P$(I%)+CHR$(?(2731+J%+I%*10))
:NEXT:NEXT
  43LP%=?2802:P%=?2803:FORI%=2T
O6:M%(I%)=?(2804+I%):NEXT
  46FLASH=0:GOSUB160
  47GOTO21
 108REM" **READ IN BLOCK DATA**
"
 110RESTORE5200:FORB%=1TO7:FORY
%=1TO2:READB$(B%,Y%):NEXT:NEXT:R
ETURN
 118REM" **PRINT BLOCK**"
 120GCOL0,C%+FLASH*8:MOVEX%*80-
80,(24-Y%*2)*40+40:PRINTCHR$(ASC
```

```
(B$(B%,1))+159):PLOT0,-32,0:PRI
NTCHR$(ASC(RIGHT$(B$(B%,1),1))+1
59):MOVEX%*80-80,(23-Y%*2)*40+48
:PRINTCHR$(ASC(B$(B%,2))+159);
  125PLOT0,-32,0:PRINTCHR$(ASC(R
IGHT$(B$(B%,2),1))+159):RETURN
  128REM" **READ IN START POSTIO
NS**"
  130FORC%=2TO6:READX%,Y%:?(2816
+X%*10+Y%)=5:IFM%(C%)=0THEN132
  131?(2560+X%*10+Y%)=C%
  132NEXT:RETURN
  138REM" **SET UP ARRAYS**"
  145FORY%=1TO10:FORX%=1TO16:?(2
816+X%*10+Y%)=6:?(2560+X%*10+Y%)
=7:NEXT:NEXT:RETURN
  148REM" **GENERATE STARMAP**"
  150FORS%=1TO25
  151X%=RND(16):Y%=RND(10):IF?(2
816+X%*10+Y%)<>6THEN151
  152IFX%>1THENIF?(2816+X%*10+Y%
-1)<>6THEN151
  153IFX%<16THENIF?(2816+X%*10+Y
%+1)<>6THEN151
  154IFY%>1THENIF?(2816+X%*10+(Y
%-1))<>6THEN151
  155IFY%<10THENIF?(2816+X%*10+(
Y%+1))<>6THEN151
  156?(2816+X%*10+Y%)=5:NEXT:RET
URN
  158REM" **PRINT STARMAP**"
  160MODE2:VDU5:FORY%=1TO10:FORX
%=1TO16:B%=?(2816+X%*10+Y%):C%=?
(2560+X%*10+Y%):GOSUB120:NEXT:NE
XT:RETURN
  168REM" **PRINT TITLE & PLAYER
**"
  170PROCWIPE(100):GCOL0,P%:MOVE
256,1000:PRINT"INTERSTELLAR":MOV
E384,964:PRINT"INTRIGUE":MOVE0,1
00:PRINTP$(P%);TAB(11)"MOVES= ";
M%
  171MOVE0,120:PLOT5,1280,120:MO
VE0,928:PLOT5,1280,928
  172IFLP%<>P%THENGCOL0,128:RETU
RN
  173PROCWIPE(32):GCOL0,9:MOVE0,
64 PRINTTAB(6)"WINNER"
  174SOUND1,-15,100,50:SOUND2,-1
5,53,25:SOUND3,-15,75,50:SOUND2,
-15,125,25:REM" **WINNING TUNE**
"
  175END
  178REM" **FLASH BLOCK AND KEY
TEST**"
  180C%=P%:B%=?(2816+X%*10+Y%):G
OSUB120
  181I$=INKEY$(5):IFI$="N"ORI$="
F"ORI$="M"ORI$="R"ORI$="E"THENRE
TURNELSE181
  188REM" **GENERATE NEUTRAL FLE
ETS**"
```

**EXAMPLES OF ATTACKS**

| BEFORE | AFTER | |
|---|---|---|
| | | |
| | | |
| | | No change because fleets are pointing towards each other. |
| | | Only a neutral fleet is involved. Therefore it effects ownership. |
| | | |
| | | The red fleet is not actually attacking because the central fleet is pointing at it. |
| | | The red fleet is also attacking. Therefore the neutral fleet has no effect. |
| | | Red has a majority of attacking fleets, so ownership goes to red. |
| | | Example of a chain reaction. |

```
  190FORS%=1TO70
  191X%=RND(16):Y%=RND(10):IF?(2
816+X%*10+Y%)<>6THEN191
  192B%=RND(4):NX%=X%+X%(B%):NY%
=Y%+Y%(B%):IFNX%=0ORNX%=17ORNY%=
0ORNY%=11THEN194
  193IF?(2560+NX%*10+NY%)<> 7THE
NB%=5-B%
  194?(2816+X%*10+Y%)=B%:NEXT:RE
TURN
  198REM" **SELECT MOVE LOCATION
**"
  200X%=8:Y%=5
  201PROCWIPE(32):MOVE384,32:GCO
L0,8:GCOL0,128:PRINT"CHOOSING":V
DU7
  202GOSUB500
  205IFI$="M"THENGOSUB250
  206IFI$="R"THENGOSUB300
  207IFI$="F"THENGOSUB350
  210IFI$="E"ORI$="S"THEN RETURN
ELSE201
  248REM" **MOVE FLEET**"
  250PROCWIPE(32):MOVE256,32:GCO
L0,8:GCOL0,128:PRINT"MOVING FLEE
T"
  251I$=INKEY$(5):IF(I$<"5"ORI$>
"8")ANDI$<>"C"THEN:GOTO251
  252IFI$="C"THEN FLASH=0:C%=P%:
B%=I%:GOSUB120:RETURN
  253I%=VAL(I$)-4
  254NX%=X%+X%(I%):NY%=Y%+Y%(I%)
:IFNX%=0ORNX%=17ORNY%=0ORNY%=11T
HEN VDU7:GOTO251
```

```
  255IF?(2816+10*NX%+NY%)<>6THEN
 VDU7:GOTO251
  256IFB%=STHENFLASH=0:GOSUB120
 C%=0:B%=7:GOSUB120 GOTO261
  257IFI%+B%=STHENGOTO251
  258OB%=B%:FLASH=0 C%=0:B%=?(28
 16+X%*10+Y%):GOSUB120:B%=7:GOSUB
 120
  259?(2560+10*X%+Y%)=7:?(2816+1
 0*X%+Y%)=6
  260B%=OB%:GOSUB400
  261X%=NX%:Y%=NY%:C%=P%:B%=I%:F
 LASH=1:GOSUB120 ?(2560+10*X%+Y%)
 =C%:?(2816+10*X%+Y%)=B%
  262GOSUB401:X%=NX%:Y%=NY%:C%=?
 (2560+10*X%+Y%) B%=I%
  263GOSUB400
  264GOSUB2000
  269VDU7
  270IFM%=0THENI$="E":FLASH=0:C%
 =P%:GOSUB120:RETURN
  275IF?(2560+10*X%+Y%)<>P%THENF
 LASH=0:C%=P% ?(2560+10*X%+Y%)=C%
 GOSUB120:RETURN
  280GOTO251
  290REM" **ROTATE FLEET**"
  300PROCWIPE(32):MOVE384,32 GCO
 L0,8:GCOL0,128:PRINT"ROTATING" V
 DU7
  301I$=INKEY$(5) IF(I$<"5"ORI$>
 "8")ANDI$<>"C"THEN301
  302IFI$="C"THEN SOUND1,-15,3,1
 0 RETURN
  303I%=VAL(I$)-4 IFI%=I%THEN301
  304OB%=B%:FLASH=0:C%=0:GOSUB12
 0 B%=I% C%=P%:GOSUB120:?(2816+10
 *X%+Y%)=B% B%=OB%:GOSUB400:B%=I%
 GOSUB401:GOSUB400
  305GOSUB2000
  307IFM%=0THENI$="E"
  308RETURN
  340REM" **FIRE AT FLEET**"
  350PROCWIPE(32):MOVE448,32:GCO
 L0,8 PRINT"FIRING":VDU7
  351I$=INKEY$(5):IF(I$<"5"ORI$>
 "8")ANDI$<>"C"THEN351
  352IFI$="C"THENVDU7:RETURN
  353I%=VAL(I$)-4:IFB%<>5ANDI%<>
 B%THEN SOUND1,-15,1,5:GOTO351
  354NX%=X%+X%(I%):NY%=Y%+Y%(I%)
 :IFNX%=0ORNX%=17ORNY%=0ORNY%=11T
 HEN SOUND1,-15,1,5:GOTO351
  355IF?(2816+10*NX%+NY%)>4THEN
 SOUND1,-15,1,5:GOTO351
  3560B%=B%:OC%=C%:OX%=X%:OY%=Y%
 X%=NX%:Y%=NY%
  357SOUND0,-15,6,20
  358I%=?(2816+10*X%+Y%):B%=I% F
 LASH=0:C%=0:GOSUB120:?(2816+10*X
```

```
 %+Y%)=6 ?(2560+10*X%+Y%)=0:GOSUB
 424
  359C%=?(2560+10*X%+Y%):GOSUB12
 0 GOSUB2000
  360IFM%=0THENI$="E":RETURN
  361RETURN
  398REM" **CHECK FLEET OR STAR**
 *"
  4000X%=X%:OY%=Y%:OB%=B%:OC%=C%
 :GOTO424
  4010X%=X% OY%=Y%:OB%=B%:OC%=C%
  402FORK%=2TO7 N%(K%)=0:NEXT:C1
 %=0:C2%=0:HN%=0:HC%=C%:EN%=1
  403FORD%=1TO4:IFD%=B%THENGOTO4
 10
  404AX%=X%+X%(D%):AY%=Y%+Y%(D%)
 IFAX%=0ORAX%=17ORAY%=0ORAY%=11T
 HEN410
  405AB%=?(2816+10*AX%+AY%):IFD%
 +AB%<>5THEN410
  406AC%=?(2560+10*AX%+AY%):N%(A
 C%)=N%(AC%)+1:IFN%(AC%)<HN%ORAC%
 =7THEN410
  407IFN%(AC%)=HN%THENEN%=1:GOTO
 410
  408HN%=N%(AC%):HC%=AC%:EN%=0
  410NEXT
  411IFEN%=0THEN420
  412IFHN%>00RN%(7)>0THENHC%=7
  420IFHC%=C%THEN430
  421IFB%=5THENM%(C%)=M%(C%)-1:M
 %(HC%)=M%(HC%)+1
  422C%=HC%:?(2560+10*X%+Y%)=C%:
 FLASH=0 GOSUB120:SOUND1,-15,17,5
  423FLASH=0:SC%=C%:SB%=B%:C%=0:
 B%=7 GOSUB120:B%=SB%:C%=SC%:IFB%
 =5THEN430
  424X%=X%+X%(B%):Y%=Y%+Y%(B%):I
 FX%=0ORX%=17ORY%=0ORY%=11THEN430
  425B%=?(2816+10*X%+Y%):IFB%=6T
 HEN430
  426C%=?(2560+10*X%+Y%):GOTO402
  430X%=0%:Y%=OY%:C%=OC%:B%=OB%
 :RETURN
  498REM" **CURSOR & KEY TEST**"
  500C%=8:B%=7:FLASH=0:GOSUB120
  510I$=INKE$(5):IF(I$<"5"ORI$>
 "8")ANDI$<>"R"ANDI$<>"M"ANDI$<>"
 F"ANDI$<>"E"ANDI$<>"S"THEN510
  515IF(I$="5"ANDX%=1)OR(I$="8"A
 NDX%=16)OR(I$="7"ANDY%=1)OR(I$="
 6"ANDY%=10)THEN510
  520IF(I$<"5"ORI$>"8")AND?(2560
 +10*X%+Y%)<>P%ANDI$<>"E"ANDI$<>"
 S"THEN510
  521IFI$="R"AND?(2816+10*X%+Y%)
 >4THEN510
  525GOSUB120
  526IFI$="E"ORI$="S"THENFLASH=0
```

```
:RETURN
  530IFI$<"5"ORI$>"8"THENB%=?(28
16+10*X%+Y%):C%=P%:FLASH=1:GOSUB
120:SOUND1,-15,9,10:RETURN
  540C%=0:B%=7:FLASH=0:GOSUB120:
I%=VAL(I$)-4:X%=X%+X%(I%):Y%=Y%+
Y%(I%):GOTO500
  598REM" **ENTER PLAYERS**"
  600CLS
  630CLS:PRINTTAB(3,6)" YOU HAVE
CHOSEN A ";NP%;" PLAYER GAME.";'
'" PLEASE ENTER EACH PLAYER'S NA
ME. UP TO";'" NINE LETTERS ARE AL
LOWED FOR EACH NAME."
  640FORP%=1TONP%
  645PRINTTAB(0,10+P%*2)" NAME O
F PLAYER ";P%;" :-";:INPUTN$:IFL
EN(N$)>9ORN$=""THENPRINTTAB(0,10
+P%*2)STRING$(39," "):GOTO645
```

```
  650C%=RND(5)+1:IFP$(C%)<>""THE
N650
  655M%(C%)=1:P$(C%)=N$
  660NEXT
  665PRINT'"     THANK YOU. PLEAS
E WAIT A MOMENT."
  690RETURN
 1000DEFPROCWIPE(U%)
 1010MOVE0,U%:GCOL0,0
 1020FORZ%=0TO19:PRINTCHR$(244);
:NEXT
 1030ENDPROC
 2000PROCWIPE(100):M%=M%-1:GCOL0
,P%:MOVE0,100:PRINTP$(P%):MOVE70
4,100:PRINT"MOVES= ";M%:RETURN
 4233FORI%=1TONP%:FORJ%=1TO10:
 5200DATAAD,DP,KL,DC,AB,IJ,MB,NC
 EF,GH,  ,  ,QR,ST
 5300DATA8,1,1,4,16,4,4,10,13,10
```

## RUNS ON AN ATARI 400/800. CONVERTED BY SIMON GOODWIN

In line 130 of this listing, the two string assignments are filled by pressing both Control and a comma symbol.
The following four lines have certain sections to be printed in inverse video:—
165 all the print statements
1174 "Start" should be in inverse video
1620 the first print statement
1640 all print statements in inverse video
And in the following lines some unprintable characters must be entered in number form and must be turned back to character form.

Line 830 includes 104,162,6,169,7,160,64,32,92,228,96
This should be turned back to characters by using
FOR J=1 TO 11: READ A: ?CHR$(A);:NEXT J
Line 160 includes 104,240,40,104,133,207,104,133,206,169,224,133,205,169,0,133,204,162,0,161,204,129
206,230,204,208,8,230,205,165,205,201,228,240,8,230,206,208,236,230,207,208,232,96,0
This should be turned back to characters by using
FOR J=1 TO 45: READ A:? CHR$(A);:NEXT J

```
100 DIM A$(1024),B$(10):RT=PEEK(106):POK
E 106,RT-8:GRAPHICS 18:POKE 16,64:POKE 5
3774,64
110 PMB=(RT-8)*256:CHB=PMB+1024:VTAB=PEE
K(134)+PEEK(135)*256:ATAB=PEEK(140)+PEEK
(141)*256
120 OFFS=PMB-ATAB:HI=INT(OFFS/256):LO=OF
FS-HI*256:POKE VTAB+2,LO:POKE VTAB+3,HI
130 POKE 54279,RT-8:POKE 559,46:POKE 532
77,3:POKE 623,1:PY=568:A$(1)=" ":A$(1024
)=" ":A$(2)=A$
140 FOR J=708 TO J+3:READ A:POKE J,A:NEX
T J:POKE 704,88:FOR J=1 TO 10:READ A
145 B$(J,J)=CHR$(A):NEXT J
150 DATA 70,56,184,120
155 DATA 255,129,129,129,129,129,129,129
,129,255
165 POSITION 3,N:? #6;"interstellar":POS
ITION 5,1:? #6;"intrigue":POSITION N,4:?
#6;"COPYRIGHT C&VG 1983"
```

```
170 FOR J=CHB+24 TO J+87:READ A:POKE J,A
:NEXT J:OPEN #1,4,N,"K"
180 DATA 0,16,48,126,254,126,48,16
190 DATA 0,28,28,28,127,62,28,8
200 DATA 8,28,62,127,28,28,28,0
210 DATA 0,8,12,126,127,126,12,8
220 DATA 0,24,60,126,126,60,24,0
230 DATA 0,16,48,94,130,94,48,16
240 DATA 0,28,20,20,119,34,20,8
250 DATA 8,20,34,119,20,20,28,0
260 DATA 0,8,12,122,65,122,12,8
270 DATA 0,24,60,102,102,60,24,0
280 DATA 146,212,9,38,192,40,66,137
800 J=1536:DL=PEEK(560)+PEEK(561)*256:
KE DL+3,199:POKE DL+15,135:POKE 1790,1
POKE 1791,234:POKE 1788,N
810 READ A:IF A<>-1 THEN POKE J,A:J=J+
GOTO 810
815 J=1700
```

```
820 READ A:IF A<>-1 THEN POKE J,A:J=J+1:
GOTO 820
900 DATA 72,173,253,6,240,11,173,255,6,1
41,10,212,141,22,208,104,64,173,254,6,14
1,10,212,141,22,208,238,253,6,104,64,-1
950 DATA 216,169,0,141,253,6,173,252,6,2
40,22,238,192,2,206,251,6,208,14,169,7,1
41,251,6,173,192,2,24,105,9,141,192
952 DATA 2,76,98,228,-1
1000 DIM P$(36),X(4),Y(4),N(7),M(7),S(16
,10),C(16,10),I$(1),SG(7),Z(6),N$(6),S$(
10)
1002 FOR J=1 TO 6:M(J)=N:N(J)=N:Z(J)=N:N
EXT J:P$=A$:M(7)=N:N(7)=N:S$=A$
1005 FOR J=1 TO 4:READ X,Y:X(J)=X:Y(J)=Y
:NEXT J:FOR J=1 TO 7:READ X:SG(J)=X:NEXT
 J
1007 DATA -1,0,0,1,0,-1,1,0
1008 DATA 9,130,162,167,2,135,34
1010 GOSUB 1600:GOSUB 1140:GOSUB 1130:GO
SUB 1150:GOSUB 1190:POKE 756,RT-4
1012 POSITION N,N:? #6;A$(1,20):POKE 708
,24
1013 POKE 512,N:POKE 513,6:POKE 54286,19
2
1017 GOSUB 1160:P=2:LP=1
1020 M=M(P):IF M=N THEN 1023
1021 GOSUB 1170:GOSUB 1200
1022 LP=P
1023 P=P+1:IF P=7 THEN P=2
1024 GOTO 1020
1120 POSITION X,Y:IF B=6 THEN ? #6;" ":R
ETURN
1121 ? #6;CHR$(SG(C)+B):RETURN
1130 FOR C=2 TO 6:READ X,Y:S(X,Y)=5:IF M
(C)=N THEN 1132
1131 C(X,Y)=C
1132 NEXT C:RETURN
1135 DATA 8,1,1,4,16,4,4,10,13,10
1140 FOR X=1 TO 16:FOR Y=1 TO 10:S(X,Y)=
6:C(X,Y)=7:NEXT Y:NEXT X:RETURN
1150 FOR S=1 TO 25
1151 X=1+INT(RND(N)*16):Y=1+INT(RND(N)*1
0):IF S(X,Y)<>6 THEN 1151
1152 IF X>1 THEN IF S(X-1,Y)<>6 THEN 115
1
1153 IF X<16 THEN IF S(X+1,Y)<>6 THEN 11
51
1154 IF Y>1 THEN IF S(X,Y-1)<>6 THEN 115
1
1155 IF Y<10 THEN IF S(X,Y+1)<>6 THEN 11
51
1156 S(X,Y)=5:NEXT S:RETURN
1160 FOR Y=1 TO 10:FOR X=1 TO 16:B=S(X,Y
):C=C(X,Y):GOSUB 1120:NEXT X:NEXT Y:RETU
RN
1170 POSITION N,11:? #6;CHR$(5+SG(P));"
";P$(P*6-5,P*6);" MOVES= ";M:IF LP<>P TH
EN RETURN
1173 POSITION N,N:? #6;"   ** WINNER **"
:POKE 53248,N:FOR J=1 TO 500:NEXT J
1174 POSITION 3,4:? #6;A$(1,13):POSITION
 3,5:? #6;" press start ":POSITION 3,6:?
 #6;A$(1,13)
1175 FOR J=1 TO 10:NEXT J:IF PEEK(53279)
=7 THEN 1175
1176 RUN
1180 C=P:B=S(X,Y):GOSUB 1120
1181 GET #1,A:I$=CHR$(A):IF I$="N" OR I$
="F" OR I$="M" OR I$="R" OR I$="E" THEN
RETURN
1182 GOTO 1181
1190 FOR S=1 TO 70
1191 X=1+INT(RND(N)*16):Y=1+INT(RND(N)*1
0):IF S(X,Y)<>6 THEN 1191
1192 B=1+INT(RND(N)*4):NX=X+X(B):NY=Y+Y(
B):IF NX=N OR NX=17 OR NY=N OR NY=11 THE
N 1194
1193 IF C(NX,NY)<>7 THEN B=5-B
1194 S(X,Y)=B:NEXT S:RETURN
1200 X=8:Y=5:POKE 53248,112:PY=568:A$(5
2,640)=A$:A$(PY,PY+9)=B$
1201 SOUND N,100,10,15:POSITION 3,N:? #
;"  CHOOSING      ";:SOUND N,N,N,N:GOSUB
500
```

```
1205 IF I$="M" THEN GOSUB 2000:GOSUB 124
0
1206 IF I$="R" THEN GOSUB 2000:GOSUB 130
0
1207 IF I$="F" THEN GOSUB 2000:GOSUB 135
0
1208 POKE 1788,N:POKE 704,88
1210 IF I$="E" THEN RETURN
1211 GOTO 1201
1240 POSITION 3,N:? #6;"MOVING FLEET";
1242 GET #1,A:I$=CHR$(A):IF I$="C" THEN
RETURN
1244 IF I$="+" THEN I=1:GOTO 1254
1246 IF I$="=" THEN I=2:GOTO 1254
1248 IF I$="-" THEN I=3:GOTO 1254
1250 IF I$="*" THEN I=4:GOTO 1254
1252 GOTO 1242
1254 NX=X+X(I):NY=Y+Y(I):IF NX=N OR NX=1
7 OR NY=N OR NY=11 THEN 1242
1255 IF S(NX,NY)<>6 THEN 1242
1256 IF B=5 THEN GOSUB 1120:GOTO 1261
1257 IF I+B=5 THEN 1242
1258 OB=B:C=7:B=6:GOSUB 1120
```

```
1259 C(X,Y)=7:S(X,Y)=B
1260 B=OB:GOSUB 1400
1261 X=NX:POKE 53248,48+8*X:A$(PY,PY+9)=
S$:PY=PY+8*Y(I):Y=NY:A$(PY,PY+9)=B$:C=P:
B=I:GOSUB 1120:C(X,Y)=C:S(X,Y)=B
1262 GOSUB 1401:X=NX:Y=NY:C=C(X,Y):B=I
1263 GOSUB 1400
1268 SOUND N,200,10,15:M=M-1:POSITION 16
,11:? #6;M;" ":SOUND N,N,N,N
1270 IF M=N THEN I$="E":GOSUB 1120:RETUR
N
1275 IF C(X,Y)<>P THEN GOSUB 1120:RETURN

1280 GOTO 1242
1300 POSITION 3,N:? #6;"  ROTATING      "
;
1301 GET #1,A:I$=CHR$(A):IF I$="C" THEN
SOUND N,150,4,15:FOR J=1 TO 50:NEXT J:SO
UND N,N,N,N:RETURN
1302 IF I$="+" THEN I=1:GOTO 1320
1303 IF I$="=" THEN I=2:GOTO 1320
1304 IF I$="-" THEN I=3:GOTO 1320
1305 IF I$="*" THEN I=4:GOTO 1320
1306 GOTO 1301
1320 IF I=B THEN 1301
1321 OB=B:B=I:GOSUB 1120:S(X,Y)=B:B=OB:G
OSUB 1400:B=I:GOSUB 1401:GOSUB 1400
1322 SOUND N,121,14,15:M=M-1:POSITION 16
,11:? #6;M;" ":SOUND N,N,N,N
1323 IF M=N THEN I$="E"
1324 RETURN
1350 POSITION 3,N:? #6;"   FIRING  "
1351 GET #1,A:I$=CHR$(A):IF I$="C" THEN
SOUND N,150,4,15:FOR J=1 TO 50:NEXT J:SO
UND N,N,N,N:RETURN
1352 IF I$="+" THEN I=1:GOTO 1357
1353 IF I$="=" THEN I=2:GOTO 1357
1354 IF I$="-" THEN I=3:GOTO 1357
1355 IF I$="*" THEN I=4:GOTO 1357
1356 GOTO 1351
1357 IF B<>5 AND I<>B THEN 1351
1358 NX=X+X(I):NY=Y+Y(I):IF NX=N OR NX=1
7 OR NY=N OR NY=11 THEN 1351
1359 IF S(NX,NY)>4 THEN 1351
1360 OB=B:OC=C:OX=X:OY=Y:X=NX:Y=NY
1361 FOR J=N TO 200 STEP 10:SOUND N,J,10
,15:NEXT J:SOUND N,N,N,N:GOSUB 1370
1362 I=S(X,Y):B=6:GOSUB 1120:S(X,Y)=6:C(
X,Y)=N:B=I:GOSUB 1424
1363 C=C(X,Y):GOSUB 1120:M=M-1:POSITION
16,11:? #6;M;" "
1364 IF M=N THEN I$="E"
1365 RETURN
1370 POSITION X,Y:? #6;"-":FOR J=N TO 15
0 STEP 3:SOUND N,J,8,15:NEXT J:SOUND N,N
,N,N:RETURN
1400 OX=X:OY=Y:OB=B:OC=C:GOTO 1424
1401 OX=X:OY=Y:OB=B:OC=C
1402 FOR K=2 TO 7:N(K)=N:NEXT K:C1=N:C2=
N:HN=N:HC=C:EN=1
1403 FOR D=1 TO 4:IF D=B THEN 1410
1404 AX=X+X(D):AY=Y+Y(D):IF AX=N OR AX=1
7 OR AY=N OR AY=11 THEN 1410
1405 AB=S(AX,AY):IF D+AB<>5 THEN 1410
1406 AC=C(AX,AY):N(AC)=N(AC)+1:IF N(AC)<
HN OR AC=7 THEN 1410
1407 IF N(AC)=HN THEN EN=1:GOTO 1410
1408 HN=N(AC):HC=AC:EN=N
1410 NEXT D
1411 IF EN=N THEN 1420
1412 IF HN>N OR N(7)>N THEN HC=7
1420 IF HC=C THEN 1430
1421 IF B=5 THEN M(C)=M(C)-1:M(HC)=M(HC)
+1
1422 SOUND N,100,8,15:C=HC:C(X,Y)=C:GOSU
B 1120:SOUND N,N,N,N
1423 IF B=5 THEN 1430
1424 X=X+X(B):Y=Y+Y(B):IF X=N OR X=17 OR
 Y=N OR Y=11 THEN 1430
1425 B=S(X,Y):IF B=6 THEN 1430
1426 C=C(X,Y):GOTO 1402
1430 X=OX:Y=OY:C=OC:B=OB:RETURN
1500 REM CURSOR
1501 I=N:GET #1,A:I$=CHR$(A)
1502 IF I$="+" THEN I=1:GOTO 1515
1503 IF I$="=" THEN I=2:GOTO 1515
1504 IF I$="-" THEN I=3:GOTO 1515
1505 IF I$="*" THEN I=4:GOTO 1515
1510 IF I$<>"R" AND I$<>"M" AND I$<>"F"
AND I$<>"E" THEN 1501
1515 IF (I=1 AND X=1) OR (I=4 AND X=16)
OR (I=3 AND Y=1) OR (I=2 AND Y=10) THEN
1501
1520 IF I=N AND C(X,Y)<>P AND I$<>"E" TH
EN 1501
1521 IF I$="R" AND S(X,Y)>4 THEN 1501
1526 IF I$="E" THEN RETURN
1530 IF I=N THEN B=S(X,Y):C=P:SOUND N,50
,4,15:FOR J=1 TO 10:NEXT J:SOUND N,N,N,N
:RETURN
1540 X=X+X(I):POKE 53248,48+X*8:IF Y(I)=
N THEN 1500
1550 A$(PY,PY+9)=S$:PY=PY+8*Y(I):A$(PY,P
Y+9)=B$:Y=Y+Y(I):GOTO 1500
1600 POSITION 3,7:? #6;"Press any key":G
ET #1,A
1620 ? #6;")THIS GAME IS FOR      2 TO 5
 PLAYERS":? #6:? #6;"HOW MANY SHALL PLAY
?":N$="      "
1630 GET #1,A:A=A-48:IF A<2 OR A>5 THEN
1630
1640 NP=A:? #6;"PLEASE ENTER EACH   PLAY
ERS NAME - UP TO six LETTERS ARE      ALLO
WED":X=N:Y=10:L=1:P=1
1650 POSITION X,Y:? #6;"*"
1660 GET #1,A:IF A=126 THEN 1700
1662 IF A=155 AND L=1 THEN 1660
1665 IF A=155 THEN L=1:GOTO 1800
1670 N$(L,L)=CHR$(A):L=L+1:IF L>6 THEN L
=1:GOTO 1800
1680 POSITION X,Y:? #6;CHR$(A):X=X+1:GOT
O 1650
1700 POSITION X,Y:? #6;" ":L=L-1:X=X-1:I
F X<N THEN X=N:L=1
1710 GOTO 1650
1800 C=INT(RND(N)*5)+2:IF Z(C)<>N THEN 1
800
1810 M(C)=1:Z(C)=1:P$(C*6-5,C*6)=N$:P=P+
1:IF P>NP THEN 1900
1820 X=N:Y=10:POSITION X,Y:N$="      ":?
 #6;N$:GOTO 1650
1900 ? #6;")PLEASE WAIT 20 SECS":RETURN
2000 POKE 1787,7:POKE 704,4:POKE 1788,1:
RETURN
```

ILLUSTRATION STEPHEN GULLIS

```
1 CLEAR5000,&H7000:POKE65495,0:GR=&H7000:ML=&H7020:GOSUB60100
2 DIMX(4),Y(4),N(7),M(7)
3 X(1)=-1:Y(1)=0
4 X(2)=0:Y(2)=1
5 X(3)=0:Y(3)=-1
6 X(4)=1:Y(4)=0
7 DEF FNCC(O)=VAL(MID$(C$(X),Y,1))
8 DEF FNSS(O)=VAL(MID$(S$(X),Y,1))
9 DEF FNCL(O)=VAL("&H"+MID$(",AAFFA5F5A0",2*(P-1),2))
10 DEF FNIK(O)=(I$="")OR(INSTR(AR$+"C",I$))=0
11 AR$=CHR$(8)+CHR$(10)+CHR$(9)+CHR$(94)
12 DEF FNAR(O)=VAL(MID$("5687",INSTR(AR$,I$),1))-4
15 GOSUB600:GOSUB140:GOSUB110:GOSUB130:GOSUB150
16 GOSUB190 'NEUTRAL FLEETS
17 PMODE3,1:PCLS2:SCREEN1,0:CL=85:GOSUB60005:M$="INTERSTELLAR@IN
   TRIGUE":GOSUB61000
18 GOSUB160
19 P=2:LP=1
20 M=M(P):IFM=0THEN23
21 Q$=INKEY$:GOSUB170:GOSUB200
22 LP=P
23 P=P+1:IFP=7THENP=2
24 GOTO20
50 OC=C:OB=B:C=1:B=6:GOSUB120:C=OC:B=OB:RETURN
55 GOSUB50:GOTO120
110 GOTO5200
120 DRAW"BM"+STR$(16*(X-1))+","+STR$(16*(Y-1))+B$(B,C):RETURN
130 NA$="START":GOSUB60010:FORC=2TO6:READX,Y:MID$(S$(X),Y,1)="5"
    :IFM(C)=0THEN132
131 MID$(C$(X),Y,1)=MID$(STR$(C),2)
132 NEXTC:RETURN
140 DIMB$(7,7)
141 DIMS$(16)
142 DIMC$(16)
145 FORX=1TO16:S$(X)=STRING$(10,"6"):C$(X)=STRING$(10,"7"):NEXTX
    :RETURN
150 FORS=1TO25
151 X=RND(16):Y=RND(10):IF FNSS(0)<>6THEN151
152 IFX>1THENIFMID$(S$(X-1),Y,1)<>"6"THEN151
153 IFX<16THENIFMID$(S$(X+1),Y,1)<>"6"THEN151
154 IFY>1THENIFMID$(S$(X),Y-1,1)<>"6"THEN151
155 IFY<10THENIFMID$(S$(X),Y+1,1)<>"6"THEN151
156 MID$(S$(X),Y,1)="5":NEXTS:RETURN
160 LINE(0,161)-(255,161),PSET:FORY=1TO10:FORX=1TO16:B= FNSS(0):
    C= FNCC(0):GOSUB120:NEXTX,Y:RETURN
170 IFLP=P THEN173ELSECL=FNCL(0):GOSUB60005:CL=85:G=100:GOSUB185
    :GOSUB60005:M$=P$(P)+"@MOVES"+STR$(M)
171 IFINKEY$=""THENGOSUB61000:GOSUB185:GOTO170
172 RETURN
173 CL=85:G=100:GOSUB60005:GOSUB185:M$=P$(P)+"@WINNER":GOSUB6100
    0:GOSUB185:PLAY"T50ABCDE":IFINKEY$=""THEN173ELSERUN
176 Q$=INKEY$:IFQ$=""THEN176ELSERETURN
185 FORG1=1TOG:NEXTG1:RETURN
190 FORS=1TO70
191 X=RND(16):Y=RND(10):IF FNSS(0)<>6THEN191
192 B=RND(4):NX=X+X(B):NY=Y+Y(B):IFNX=0ORNX=17ORNY=0ORNY=11THEN1
    94
193 IF FNCC(0)<>7 THENB=5-B
```

```
194 MID$(S$(X),Y,1)=MID$(STR$(B),2):NEXTS:RETURN
200 X=8:Y=5
201 M$="CHOOSE  MV"+STR$(M):GOSUB697:SOUND100,3
202 GOSUB500
205 IFI$="M"THENGOSUB250
206 IFI$="R"THENGOSUB300
207 IFI$="F"THENGOSUB350
210 IFI$="E" THENRETURN
220 GOTO201
250 M$="MOVING@FLEET":GOSUB697
251 I$=INKEY$:IF FNIK(0)THENGOSUB55:GOTO251
252 IFI$="C"THENRETURN
253 I=FNAR(0)
254 NX=X+X(I):NY=Y+Y(I):IFNX=0ORNX=17ORNY=0ORNY=11THEN250
255 IFMID$(S$(NX),NY,1)<>"6"THEN250
256 IFB=5 THENGOSUB120:GOTO261
257 IFI+B=5THEN250
258 OB=B:C=1:B=6:GOSUB120
259 MID$(C$(X),Y,1)="7":MID$(S$(X),Y,1)=MID$(STR$(B),2)
260 B=OB:GOSUB400
261 X=NX:Y=NY:C=P:B=I:GOSUB120:MID$(C$(X),Y,1)=MID$(STR$(C),2):M
    ID$(S$(X),Y,1)=MID$(STR$(B),2)
262 GOSUB401:X=NX:Y=NY:C=FNCC(0):B=I
263 GOSUB400
268 M=M-1:GOSUB699
269 PLAY"T100BCFEGD"
270 IFM=0THENI$="E":GOSUB120:RETURN
280 GOTO250
300 M$="ROTATING":GOSUB697
301 I$=INKEY$:IF FNIK(0)THENGOSUB55:GOTO301
302 IFI$="C"THENSOUND1,1:RETURN
303 I=FNAR(0):IFI=B THEN300
304 GOSUB50:B=I:C=OC:GOSUB120:MID$(S$(X),Y,1)=MID$(STR$(B),2):B=
    OB:GOSUB400:B=I:GOSUB401:GOSUB400
305 M=M-1:GOSUB699
306 PLAY"T50AF"
307 IFM=0THENI$="E"
308 RETURN
350 M$="FIRING":GOSUB697
351 I$=INKEY$:IF FNIK(0)THENGOSUB55:GOTO351
352 IFI$="C" THENSOUND1,1:RETURN
353 I=FNAR(0):IF(B<>5)AND(I<>B)THEN350
354 NX=X+X(I):NY=Y+Y(I):IFNX=0 OR NX=17 OR NY=0 OR NY=11 THEN350
355 IF MID$(S$(NX),NY,1)>"4"  THEN350
356 OB=B:OC=C:OX=X:OY=Y:X=NX:Y=NY
357 PLAY"T20ABDEFBA"
358 I=FNSS(0):OC=C:B=6:C=1:GOSUB120:MID$(S$(X),Y,1)="6":MID$(C$(
    X),Y,1)="0":B=I:GOSUB424
359 C=FNCC(0):GOSUB120:M=M-1:GOSUB699
360 IFM=0 THENI$="E"
400 OX=X:OY=Y:OB=B:OC=C:GOTO424
401 OX=X:OY=Y:OB=B:OC=C
402 FORK=2TO7:N(K)=0:NEXTK:C1=0:C2=0:HN=0:HC=C:EN=1
403 FORD=1TO4:IFD=B THEN410
404 AX=X+X(D):AY=Y+Y(D):IFAX=0 OR AX=17 ORAY=0 OR AY=11THEN410
405 AB=VAL(MID$(S$(AX),AY,1)):IFD+AB<>5THEN410
406 AC=VAL(MID$(C$(AX),AY,1)):N(AC)=N(AC)+1:IFN(AC)<HN OR AC=7TH
    EN410
```

```
410 NEXTD
411 IFEN=0THEN420
412 IFHN>0 OR N(7)>0THENHC=7
420 IFHC=C THEN430
421 IFB=5 THENM(C)=M(C)-1:M(HC)=M(HC)+1
422 C=HC:MID$(C$(X),Y,1)=MID$(STR$(C),2):GOSUB120:PLAY"T200ACDEF
    "
423 IFB=5THEN430
424 X=X+X(B):Y=Y+Y(B):IFX=00RX=170RY=00RY=11THEN430
425 B=FNSS(0):IFB=6THEN430
426 C=FNCC(0):GOTO402
430 X=OX:Y=OY:C=OC:B=OB:RETURN
500 B=7
503 C=4:GOSUB120:C=2:GOSUB120
510 I$=INKEY$:IFI$="" OR INSTR(AR$+"RMFES",I$)=0THEN503
```

```
512 IFINSTR(AR$,I$) THENI$=CHR$(FNAR(0)+52)
515 IF(I$="5" AND X=1)OR(I$="8" AND X=16)OR(I$="7" AND Y=1)OR(I$
    ="6" AND Y=10)THEN503
520 IF(INSTR("5678",I$)=0)AND MID$(C$(X),Y,1)<>MID$(STR$(P),2) A
    ND I$<>"E" THEN503
521 IFI$="R" AND MID$(S$(X),Y,1)>"4" THEN503
525 GOSUB120
526 IF INSTR("E",I$)THENRETURN
530 IF INSTR("5678",I$)=0THENB=FNSS(0):C=P:GOSUB120:RETURN
540 I=VAL(I$)-4:X=X+X(I):Y=Y+Y(I):GOTO500
600 DIMP$(6):CLS
605 PRINT"      INTERSTELLAR INTRIGUE"
606 PRINT"      "+STRING$(21,"-")
610 PRINT" DESIGNED BY MIKE SINGLETON FOR
615 PRINT"      COMPUTER & VIDEO GAMES"
617 PRINT"   (CONVERSION BY RON POTKIN)"
620 PRINT@192," THIS GAME CAN BE PLAYED BY AS   FEW AS TWO PLAYE
    RS OR AS MANY   AS FIVE.PLEASE ENTER HOW MANY   PEOPLE ARE G
    OING TO PLAY."
625 INPUT"  NUMBER OF PLAYERS =";NP:IFNP<>INT(NP)ORNP<2ORNP>5 .TH
    EN625
630 PRINT@192,"   YOU HAVE A";NP;"-PLAYER GAME.","   ENTER EACH
    PLAYER'S NAME."+STRING$(4,13)
635 PRINT@256,"";
638 FORP=1TO NP
640 PRINT"PLAYER'S NAME(";MID$(STR$(P),2);")= ";
645 INPUT"";N$:IFN$=""THEN640ELSEIFLEN(N$)>9THEN:N$=LEFT$(N$,9)
650 C=RND(5)+1:IFLEFT$(P$(C),1)>CHR$(31)THEN650
655 M(C)=1:P$(C)=N$
```

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```
407 IFN(AC)=HN THENEN=1:GOTO410
408 HN=N(AC):HC=AC:EN=0
660 NEXTP
665 PRINT"THANKYOU."+CHR$(13)+" PLEASE WAIT A MOMENT...";
690 RETURN
697 CL=FNCL(0):GOSUB60005:COLOR2:AY=174:AX=INT(16-LEN(M$)):LINE(
    8*(AX-1),169)-(8*(AX+2*LEN(M$)+1),186),PSET,BF:GOTO61030
699 CL=85:M$="MOVES"+STR$(M)
700 GOSUB60005
702 GOTO61000
2000 POKE65494,0:PRINT"SAVE PROGRAM":INPUT"PRESS ENTER";B$
2010 FORI=49TO52:PRINTI-48:CSAVE"STELLAR":FORJ=1TO2000:NEXTJ,I:S
     TOP
5200 AL$="BD6DUR2U2D5R2D2U9R2U2D9ND4R6UL4UR4UL4UR4UL6"
5202 AF$="BD6DUDR2U3R2U2D12R2U14D2R2D5ND7R4UL2U2L2"
5204 AU$="ND3L2NU2ND10L2ND3"
5206 AG$="L2D2NL2DNL2D2R2U2R6UL6U"
5208 RV$="BM+12,+14;A2"
5209 'BLUE
5210 B$(1,2)="C3"+AL$
5212 B$(3,2)="C3"+AF$
5219 'GREEN
5220 B$(1,7)="C1"+AL$:B$(3,7)="C1"+AF$
5225 'RED
5226 B$(1,3)="C4"+AL$:B$(3,3)="C4"+AF$
```

```
5227 'BLUE/YEL
5228 B$(1,4)=B$(1,7)+"C2"+AU$:B$(3,4)=B$(3,2)+"C2"+AU$
5230 'RED/YEL
5231 B$(1,5)=B$(1,3)+"C2"+AG$:B$(3,5)=B$(3,3)+"C2"+AU$
5234 'BLUE/GREEN
5235 B$(1,6)=B$(1,2)+"C1"+AG$:B$(3,6)=B$(3,2)+"C1"+AU$
5239 'CURSOR
5240 CR$="DUR2BR6R4D2BD10D2L4BL6L2U2NU10U2"
5241 B$(7,2)="C2"+CR$:B$(7,4)="C4"+CR$
5249 'STAR
5250 ST$="BD6DUR2U2R2U2R2NU2R2DL2DR4DL6DR8DL10DR8DL6NL2D2R2ND2R2
     UL2U2"
5251 SC$="NU3R2NU3L4NU3"
5252 B$(5,2)="C3"+ST$:B$(5,3)="C4"+ST$
5253 B$(5,4)=B$(5,2)+"C2"+SC$:B$(5,5)=B$(5,3)+"C2"+SC$
5254 B$(5,6)=B$(5,2)+"C1"+SC$:B$(5,7)="C1"+ST$
5255 X$="R2D15R2U15"
5259 'SPACE
5260 B$(6,1)="C2D15R2U15"+X$+X$+X$
5279 'REVERSE
5280 FORC=2TO7:B$(2,C)=RV$+B$(3,C)+"A0"
5282 B$(4,C)=RV$+B$(1,C)+"A0"
5284 NEXTC:RETURN
5297 '-----------
5298 'STARTUP DATA
5299 DATA START
5300 DATA 8,1
5310 DATA1,4
5320 DATA16,4
5330 DATA4,10
5340 DATA13,10
60005 POKEGR+1,CL:DEFUSR0=GR:U=USR0(0):POKEGR+1,85:RETURN
```

```
60009 'FIND DATA
60010 RESTORE
60020 READA$:IFA$=NA$ THENRETURNELSE60020
60098 'ML TO CLEAR VIDEO BOTTOM
60099 'NEEDS GR !!!
60100 DATA GRAPH
60110 DATA C655108E1A60E7A010BC1E002DF839
60120 NA$="GRAPH":GOSUB60010
60130 C=0:READA$:FORJ=1TOLEN(A$)/2:POKEGR+C,VAL("&H"+MID$(","+A$
      ,2*J,2)):C=C+1:NEXTJ
60200 CH$="0123456789ABCDEFGHIJKLMNP RSTUVWXY*"
60210 D$="EEEEEMEGEEMEEOEEOMGEEGGEGMEGMMGOEGOMMEEMEMMGEMGMMMEMMM
      OEEOEMOGMOOEOOM"
60220 S$="KNNNNNKDIDDDDKKNBKMMWWCDCBNKCEHOWCCWMVBBNLKMMVNNKWBBCD
      GMKNNKNNKKNNLBBVKNNWNNNVNNVNNVKNMMMNKVNNNNNVWMMVMMWWMMVMMM
      KNMFNNKNNNWNNNKDDDDDKFCCCCOINOQSQONMMMMMMWNURRNNNNTTRFPNVN
      NVMMMAAAAAAVNNVQONKNMKBNKWDDDDDDNNNNNNKNNNHHDDNNNRRUNNNHD
      HNNNNNKDDD"
60230 DATA ML
```

Illustration - Stephen Gulbis

```
60240 DATA 33761F34B6A1478143270SBD8B302003BDB3ED1F0110AE02ECA1E
      D40ECA1ED42ECA1ED44ECA1ED46E684C0083404A647C6203DC306001F0
      1E6463AAF484FAE40E6A4C14F2711E680C12A260431212050E1A427034
      C20EF31213420C6073D10AE44
60250 DATA 31ABC6073404A6A08041C6033DAE42308B342010AE48EC8183404
      0484848483404ABE0E684C040585858858CB05EDA41F20C30020ED48352
      035045A26C73520EC468B02ED4635045A1026FF7F324A39
60260 IF(PEEK(ML)=51)AND(PEEK(ML+1)=118)THEN60280ELSENA$="ML":GO
      SUB60010
60270 C=0:FORI=1TO2:READA$:FORJ=1TOLEN(A$)/2:POKEML+C,VAL("&H"+M
      ID$(","+A$,2*J,2)):C=C+1:NEXTJ,I
60280 AD$="":U=VARPTR(CH$):GOSUB60290:U=VARPTR(D$):GOSUB60290:U=
      VARPTR(S$)
60290 AD$=AD$+CHR$(PEEK(U+2))+CHR$(PEEK(U+3)):RETURN
60997 'PRINT ALPHA GRAPHICS
61000 AY=174:J=0:K=INSTR(1,M$,"@"):IFK>0THENJ=1:AY=168:K=INSTR(K
      +1,M$,"@"):IFK>0THENJ=2:AY=164
61010 I=INSTR(M$,"@"):IFI<>0THENX$=MID$(M$,I+1):M$=LEFT$(M$,I-1)
      :GOSUB61040:M$=X$:AY=AY+(10-4*(J=1)):GOTO61010ELSE61040
61020 J=INSTR(M$,"@"):IFJ<>0THENX$=MID$(M$,J+1):M$=LEFT$(M$,J-1)
      :GOSUB7:M$=X$:AY=AY+10:GOTO61020
61030 'USR
61035 MS$=AD$+CHR$(AX)+CHR$(AY)+M$:DEFUSR0=ML:US=USR0(VARPTR(MS$
      )):RETURN
61040 AX=INT(16-LEN(M$)):GOTO61030
```

# BEACON STAR WARS

**Two alien races clash in deepest space**

by Ron Potkin

All over the galaxy contests like this are being fought, each unique in its own way and yet each similar in so many aspects.

Who was to guess that the emnity between the forces of Bluuton and the crimson ships of Redare would last thus long and be so intense? But greed is a strange thing and both of these ambitious space tribes knows the full worth of the riches which are being uncovered before their very eyes.

Both know that they must keep the secret from the mighty empires, which would rush in and swallow the prize and wipe out the squabbling tribes like so much space dust.

And both tribes know that if they can harness this wealth of energy for themselves then their tribe might one day rank as high as those great empires and control just as large a slice of the galaxy . . . but first . . . they just have to defeat their rivals.

The Beacon Stars, rich in stellar energy, had lain there for eons but their light had been stifled by the darkness and their power remained undiscovered in the blackness of the "Dead Areas" into which no spacecraft dared travel.

Then came the Scavengers, a strange space phenomena, no-one ever saw them none knew where they would strike next and few could but wonder at the results they produced.

The first sign was a strange green glow in the night sky where a "Dead Area" had been before and then the blackness was gone forever and sometimes a bright Beacon Star shone out from where the darkness had been.

The Beacon Star Wars are fought out between the fleets of Redare and Bluuton as they rush to capture the stars and use them to produce the stellar-energy creating Stargates.

Their fleets are made up of Miner ships fast and useful for exploration and Gun ships, slow but mighty in battle.

And each has a base stargate, immovable but strong in defence and able to produce new ships to add to the fleets.

Other stargates can be built on the sites of captured Beacon Stars by having a Miner ship and a Gun ship adjacent to the Beacon Star and cannibalising these to create a star gate.

Every star gate produces three E.R.Us every turn and these are the mark of who is winning the game. These are also the basis of new ships, from the cheap to produce Miners, to the expensive Gun Ships.

## OPERATING INSTRUCTIONS

1. Rewind the tape fully and press the PLAY button on the recorder. Type CLOAD and press ENTER.
2. Once the program has been loaded — it takes about 60 seconds — type RUN and press ENTER.
3. There will be a slight pause. The logo and title will then appear on the screen. This indicates that the board is being prepared.
4. The board appears with the Bluutons on the left side of the screen and the Redarians on the right. The Dead Areas appear in the central part of the screen.
5. The bottom part of the screen is devoted to messages and information. Currently, this will be flashing the message:

BLUUTON
PRESS ENTER

The Bluutons always move first.

## THE RULES OF PLAY

### 1. Objective.

To earn the most number of energy resource un (ERU's) before the last Dead Area is cleared.

### 2. Sequence of play.

a) The Blue player moves his pieces. The comma available are:
Move — use the numbers 1 to 6
Jump — press "J"
Capture — occupy a Beacon Star
Produce — press "P"
Complete — press "C". Checks for remaining attacks
Finish — press "F". Does not check for attacks.
b) Combat takes place. The computer will determine result of all attacks.
c) One Dead area is removed from the board. The area to be cleared is determined and painted blue.
d) Scavenger explosions are determined and pa green.
e) The Red player now plays and steps (a) to (d) repeated.
f) The game finishes after 30 turns when the Dead are cleared, the winner is the player earning the ERU's. Note that ships in play have no value.

### 3. The Pieces.

Each player commences with five pieces. These may during the course of play be increased up to a maximum of sixteen.

The capabilities of each piece are:

Start Moves Attack Defence Jumps Cost Prod

| | Start with | Moves | Attacks Factors | Defence Factors | Jump | Cost (ERU) | Prod |
|---|---|---|---|---|---|---|---|
| Stargate | 1 | 0 | 2 | 2 | 0 | 0 | 3 |
| Battleship | 2 | 3 | 4 | 5 | 2 | 5 | 0 |
| Miner | 2 | 5 | 1 | 3 | 3 | 3 | 0 |

### 4. Other Pieces.

Other pieces on the board are:

a) Clear Hex — Yellow hex. Pieces may normally only enter these hex.

b) Dead Areas — these are red hex. There are 30 when the game commences. One is cleared before each player starts his turn. The game finishes when the last hex is cleared, the current player has finished his moves and all attacks are complete. No piece may enter a Dead Area.

c) Beacon Stars — These are green stars. There are 10 hidden underneath the Dead Areas. They cannot be occupied until the Dead Area is removed.

d) Scavengers at Work! — this is a blue hex. It indicates where the next Dead Area will be cleared.

e) Scavenger Explosion — this is a green hex. It indicates that a scvenger has moved too close to a star. The star may be in a clear space or lying beneath a Dead Area.

f) The red half hex around the edge of the board are merely decorative and do not form part of the playing area.

### 5. Starting play.

Each player must press ENTER to start his turn. He will be prompted for his move by a piece flashing. The message area shows the status of this piece i.e.

Name of the side currently moving Name of current piece Balance of ERU's
Index number XXX
Moves XX
Attack Factors XX
Defence Factors XX

### 6. Moving.

The number of moves available appear in the top-right corner of the message area. To move one hex, press a number from 1 to 6. Visualise a six-hour clock (see below). If you wish to STOP moving before all modes are expended, press "S". A piece must stop when it moves next to an opponent.

### 7. Production.

At the player's option, new pieces may be produced and brought immediately into play. There are three restrictions:

a) New ships must be docked at the Base Stargate (The one at the edge of the board).

b) Each Stargate has a maximum of four docks. Occupied docks or docks adjacent to an opponent may not be used.

c) The number of pieces for one side must not exceed sixteen.

To produce ships type "P" and when the number of free docks appear type "M" for a minership or "G" for a gunship. Provided sufficient ERU's are available, the ships will be placed in a dock. Press "A" when complete.

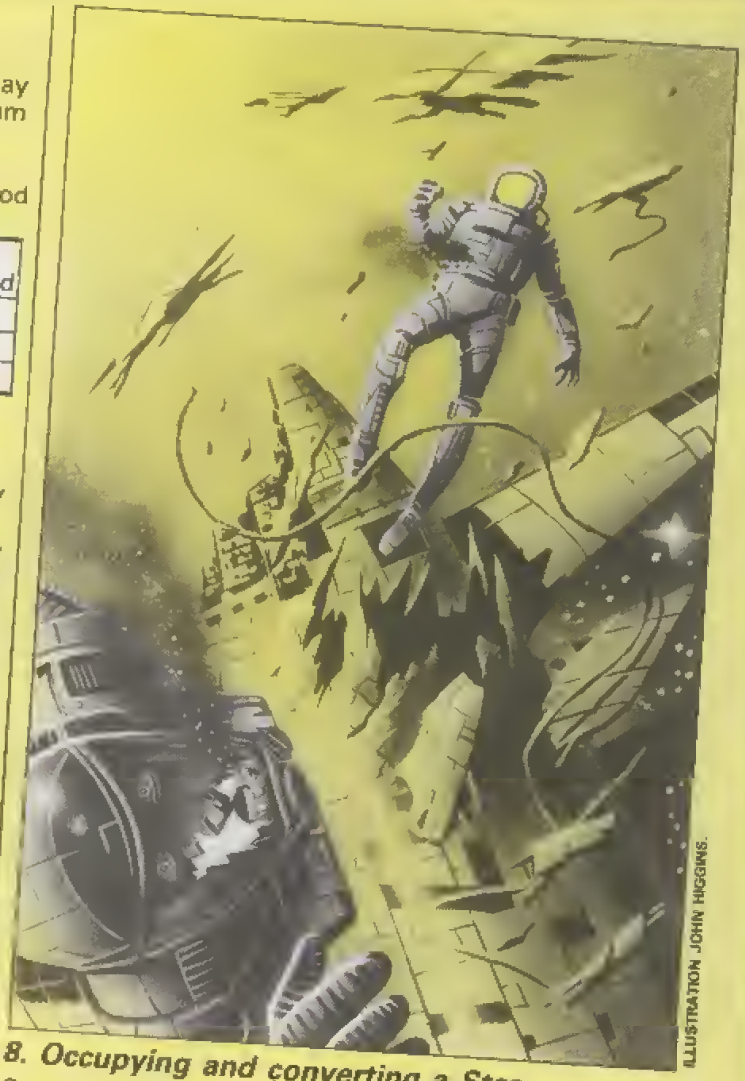

ILLUSTRATION JOHN HIGGINS.

### 8. Occupying and converting a Star.

Occupying a Beacon Star requires both a miner and a gunship. If a gunship is in orbit around a star then a miner may be moved into and occupy the star hex. The miner and the star combine to form a Stargate.

Occupation may not take place if an opponent is in orbit around the star.

New Stargates will commence producing three ERU's per turn starting with the player's next turn.

### 9. Jumps

If a ship is in orbit around a friendly Stargate it may jump through hyper-space to another Stargate provided the destination is not under attack. Press "J" to jump the current piece. Each Stargate will flicker in turn. Press "Y" if you wish to jump to that Stargate. Press "N" if you do not. Press ENTER or "A" to abort the jump command.

If the distance between the two hex exceeds the maximum allowed, there is possibility that the jump may fail. Each hex over the maximum reduces the chance of success by ten percent. This is indicated on the screen.

### 10. "C" and "F".

If a player decides that his turn is complete and no further pieces need be moved, he may press "C". The computer will check all remaining pieces and look for any that are still adjacent to opponents from a previous turn.

This however is rather slow and if it can be seen that there are no potential attacks, press "F" instead. This brings the player's turn to an immediate end.

▷▷▷

## COMBAT

Once a player has completed his moves, combat will occur. If a piece is attacking a single opponent, combat is automatic, but if two or more pieces are being attacked the player will be asked to indicate the direction of attack. Enter a number from 1 to 6.

Calculation of Odds.

The combat odds are based on the ratio of the attack points of both the attacker and the defender. Any pieces adjacent to the attacker but not under attack may give assistance. Their attack points are added to those of the defender. If the defender is a stargate, the attack points of any piece in orbit will be added to the defender's points. Assistance may only be given to one defender.

The Outcome.

To determine the outcome of an attack, take the higher number, divide it by the other and round it down. The resulting number will indicate the column to be used in the table below. If the defender's points are higher, use the left side. If the attacker's are higher, use the right side.

The computer now selects a number from 1 to 10 and selects the appropriate row to obtain the result. Odds greater than six mean automatic elimination. If as the result, the defence factors fall to zero or below, a piece is eliminated.

Examples:

(1) The attacker's points total 10 points; the defender has 4 points. 10 divided by 4 gives 2.5 which is rounded down to 2. The odds therefore are 2-1 in favour of the attacker. Assuming a dice roll of 8, the outcome is 4 — the attacker loses two points.

(2) The attacker's points totals 3; the defender's total 10. This gives odds of 3-1 in favour of the defender. A dice roll of 3 is an outcome of 5 — both lose two points.

Illustration: John Higgins

## Runs a Dragon in 32K

```
250 NA=-1:IFA=0THENA=1:RETURN
+UY)THENA=-1:RETURN
260 IF(A=2*NR)OR(A=0)THENA=-1:RETURN
270 A$=INKEY$:IFA$=""THEN270ELSE280
279 'Paint box
280 GOSUB100:DRAWY$,"C"+STR$(CR):DA$=
290 GOSUB100:DRAWY$+"C"+STR$(CR):DA$=
299 'String of random numbers
300 Q=0:FORI=0TO DR-1
310 Q=Q+1:GOSUB390:IF(DX=3)OR(DX=11)THEN310ELSEPOKE
,A:NEXTI:RETURN
329 'Data Search
330 RESTORE
340 READA$:IFA$<>NA$ THEN340ELSERETURN
350 GOSUB380:GOSUB280
360 IFCR<>2 THENRETURNELSECR=1
370 J=FNEQ(0)-50:IF J<0THENRETURNELSEPOKEFNEP(0),J:I
'Create a Maze from random number table
'Input Question & Position
INC(I)=I M$,"@"):IF K=0THENM$=" ":A=160:K=INSTR(K+1,A$,"@"):IFK=0TH
ID $=I+1:GOSUB440
MID$(M$,J+1):M$=LEFT$(M$,I-1):GOSUB440:M$=X$:AY
0THENX$=MID$(M$,J+1):M$=LEFT$(M$,J-1):GOSUB430:M$=X$:AY
(AY<32)OR(AY>131)OR(AY=164)OR(AY>163)THENPRINT"ERROR":STOP
M$):POKE(VARPTR(M$)+1),31):POKE(VARPTR(M$)),US:USR(VARPTR(M$)):RETURN
IF M$="@"THEN400
"@"+STR$(FNMN(XX))+"@"+STR$(FNMN(YY)):GOTO420
M$=MID$(STR$(FNMN(XX)),2)+"@"+STR$(FNMN(YY)):GOTO420
M$=M$+CHR$(FNMN(MM)):RETURN
M$=M$+CHR$(FNMN(MM)+48):RETURN
M$=M$+CHR$(FNMN(MM)+48):RETURN
M$=M$+CHR$(FNMN(MM)+48
```

```
735 ER=1
740 QQ=SQ:GOTO80
749 'Occupation of star
750 A$=INKEY$:SX=BX:SY=BY:ER=4:I=
760 GOSUB250:IF(NA=0)AND(FNNX(TT
12:GOTO800
770 A=A+1:IFA<7THEN760ELSEIFF2=0THENER=
780 BX=SX:BY=SY:CR=2:GOSUB280:POKEFNBP(0),0
790 BX=TX:BY=TY:GOSUB280:TP=3:GOSUB580:POKEW+PL,FNS(0)-1:GOTO
800 GOSUB490:BX=SX:BY=SY:RETURN
809 'Production
810 A$=INKEY$:SQ=QQ:GOSUB1000:IFER THEN780
820 ER=0:QQ=S:IFFNMN(TT)<3 THENER=6:GOTO980
830 F1=0:FORI=1TO6:QQ=S:GOSUB70:A=1:GOSUB250:IFAJ THENB70
840 BX=BX+UX:BY=BY+UY
850 F2=0:FORA=1TO6:GOSUB250:IFNA=1 THENA=7:F2=0ELSEF2=1
860 NEXTA:IFF2 THENF1=F1+1:DK(F1)=I
870 NEXTI
880 IFF1=0THENER=9:GOTO980
890 GOSUB30:AY=164:AX=1:M$=ME$(14)+STR$(F1)+"          "+STR$(CO(PL)):GOSUB420
900 QQ=S:GOSUB70
910 GOSUB920:J=INSTR("MGA",A$):ON J+1GOTO910,930,940,990
920 G=100:A$=INKEY$:IFA$<>""THENRETURNELSEAX=25:AY=174:M$="MGA":GOSUB430:GOSUB140
:M$="    ":GOSUB430:GOSUB140:GOTO920
930 CS=3:TP=1:GOTO950
940 CS=5:TP=2
950 IFCS>CO(PL)THEN910ELSECO(PL)=CO(PL)-CS:A=DK(F1):BX=BX+FNXY(0):BY=B(+INXY(1):
F1=F1-1
960 QQ=FNST(0)+1:GOSUB580
970 GOSUB1000:IFER=0 THENB80
980 GOSUB490
990 QQ=SQ:GOTO80
1000 ER=0:IFCO(PL)<3THENER=6ELSEIFFNST(0)=NR+NR*PL THENER=7
1010 RETURN
1019 'Distance between two hex
1020 DX=ABS(SX-TX):DY=ABS(SY-TY):I=ABS(DX/2+DY/2):J=ABS(DX/2-DY/2):K=DX+I:L=DX+J
:MN=I+J
1030 IFMN>K THENMN=K
1040 IFMN>L THENMN=L
1050 RETURN
1059 'Determine player - Game is controlled by this line
1060 PL=1-PL:S=1+NR*PL:GOSUB1140:GOSUB520:GOSUB1070:GOTO1060
1069 'Fix Dead Areas
1070 IFDR<0THEN2300ELSECR=2:I=DR:GOSUB350:DR=DR-1:IFDR<>0THENI=DR:CR=3:GOSUB350
1079 'Fix Green Explosions
1080 IFSS<>DA THENFORJ=0TO1:I=DE(J):IFI=200THENNEXTJ:ELSEGOSUB380:POKEFNBP(0),0:
CR=2:GOSUB280:NEXTJ
1090 FORJ=0TO1:DE(J)=200
1100 SS=SS+1:IFSS=76 THENSS=DA
1110 I=SS:GOSUB380:IFFNBQ(0)<>0THEN1100ELSEFORA=1TO6:GOSUB250:IF(AJ=49)OR(AJ=9
THENA=7:NEXTA:ELSENEXTA:GOTO1130
```

## ATTACK TABLE

| Attacker | | | | | | | Evens | | | | | Defender |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 |
| D | 1 | 3 | 4 | 6 | 7 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| i | 2 | 2 | 3 | 5 | 6 | 8 | 9 | 9 | 0 | 0 | 0 | 0 |
| c | 3 | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 9 | 0 | 0 | 0 |
| e | 4 | 2 | 2 | 3 | 5 | 6 | 7 | 8 | 9 | 9 | 0 | 0 |
| | 5 | 2 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 9 | 0 |
| | 6 | 1 | 2 | 3 | 4 | 4 | 6 | 6 | 8 | 8 | 9 | 9 |
| R | 7 | 1 | 2 | 2 | 3 | 4 | 5 | 5 | 7 | 8 | 9 | 9 |
| o | 8 | 1 | 1 | 2 | 3 | 3 | 4 | 4 | 7 | 7 | 9 | 9 |
| l | 9 | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 6 | 7 | 9 | 9 |
| l | 10 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 5 | 7 | 8 | 8 |

Interpretation of Results:

| Number | Outcome |
|---|---|
| 1 | Attacker Eliminated |
| 2 | Attacker loses half Defence Points |
| 3 | Attacker loses three Defence Points |
| 4 | Attacker loses two Defence Points |
| 5 | Both lose two Defence Points |
| 6 | No damage |
| 7 | Defender loses two Defence Points |
| 8 | Defender loses three Defence Points |
| 9 | Defender loses half Defence Points |
| 0 | Defender Eliminated |

● **Note that if a piece is eliminated that hex, unless it is adjacent to a stargate, becomes a Dead Area which will not be cleared before the end of the game. A stargate however is not removed; instead it is captured and changes sides.**

Illustration: John Higgins

```
1120 DE(J)=SS:POKEFNBP(0),53:GOSUB100:ER=1:GOSUB280
1130 NEXTJ:RETURN
1139 'Player PL'S turn
1140 IFFNST(0)'S THENRETURNELSEFORQQ=S TO FNST(0):CO(PL)=CO(PL)-3*(FNMN(TT)=3):P
OKEFNPC(ID),0:POKEFNPC(FG),0:POKEFNPC(AID),0:NEXTQQ
1150 M$=100:M$=ME$(PL)+ME$(3):GOSUB140:GOSUB30:GOSUB400:IFINKEY$=""THENGOSUB140:G
OTO1150
1160 A$="":QQ=S:ZZ=0
1170 GOSUB30:MV=FNMN(MM):IFMV=0THEN1310
1180 GOSUB460
1190 GOSUB80:IFA$="C"THEN1280
1200 GOSUB500:MF=1
1210 GOSUB50:IFA THEN1240ELSEJ=INSTR("CSFJP",A$):ON J+1 GOTO1210,1280,1280,1320,
1320,1280
1230 M$=ME$(16):GOSUB40:GOSUB810:GOTO1180
1250 M$=ME$(19):GOSUB40:GOSUB610:A$=INKEY$:IFER THEN1180ELSE1280
1240 GOSUB250
1250 IF(AJ=49)AND(FNMN(TT)=1)THENM$=ME$(17):GOSUB40:GOSUB750:A$=INKEY$:IFER=4THE
N1310ELSE1210
1260 IFAJ<>0THENSOUND10,5:GOTO1210
1270 POKEFNBP(0),0:POKEFNBP(1),QQ:GOSUB190:BX=BX+UX:BY=BY+UY:GOSUB120:GOSUB170
1280 FORA=1TO6:GOSUB250:IFNA=1 THENGOSUB130:MF=100:M$=ME$(18)+STR$(FNNX(NN)):GOS
UB80:NEXTFLSENEXT
1290 IFMF=100THENPLAY"T200;O2ABCDEFG":GOSUB30:ZZ=1
1300 IFINSTR("CS",A$)THEN1310ELSEMV=MV-MF:IF MV>0THEN1180
1310 PLAY"T100;O2GFEDCBA":QQ=QQ+1:IFQQ<=FNST(0)THEN1170
1320 Enter COMBAT sequence
1330 M$=ME$(20):IFZZ THENGOSUB40ELSEM$=ME$(21)+M$:GOTO40
1340 First find attackers - if they are attacking more than one request decis
ion
1350 A$=INKEY$:HX=0:FORQQ=S TO S+NR:IFFNMN(FG)=0THEN1360
1360 IFFNMN(FG)=1THENAJ=FNMN(ID):POKEFNAJ(AID),1:GOTO1360ELSEGOSUB80:GOSUB30:ER=
GOSUB450
1370 GOSUB50:GOSUB250:IFNA=1 THENM$=ME$(20):GOSUB40:GOSUB130:POKEFNAJ(AI),1ELSE1
0
1380 GOTO0
1390 Bound set up QB for each combat sequence
1400 Test if FG set. If so, save in ID in QB. Now test rest and check if any at
tack piece. Save in QB. Defender in QB(0)
```

```
1369 'Calculate attack factors as we go
1370 IFHX THENCR=2:GOSUB210
1380 AP=0:QQ=5:HH=0
1390 IFFNMN(FG)=0THENQQ=QQ+1:IFQQ<FNST(0)THENRETURN ELSE1390
1400 AJ=FNMN(ID):POKEFNQA(0),AJ:POKEFNAJ(AID),1:GOSUB1430
1410 QQ=QQ+1:IFQQ>FNST(0)THEN1440ELSE1FFNMN(ID)=AJ THENGOSUB1430
1420 GOTO1410
1430 POKEFNPC(FG),0:HH=HH+1:POKEFNQA(HH),QQ:AP=AP+FNMN(AA):RETURN
1439 'Now calculate defender factors plus assistance
1440 AJ=FNQB(0):DP=FNNX(AA):GOSUB1740:DP=DP+K
1449 'Get column and random row
1450 A=AP/DP:B=INT(A):IFA<6THENRT=10ELSEIF6*A<1THENRT=1ELSERT=FNRT(RND(10))
1460 IFRT=0THENRT=10
1470 CR=1:GOSUB210:HX=1
1480 GOSUB30:M$=RT$(RT):GOSUB400
1490 GOSUB270
1499 'Outcomes
1500 ON RT GOSUB1520,1530,1560,1570,1600,1620,1630,1640,1670,1700
1510 GOTO1730
1520 K=99:GOTO1650
1530 IFAT=1THENK=99:GOTO1650
1540 IFCA=1THENGOSUB1860
1550 NEXT:GOTO1650
1560 K=INT(DP/2):GOTO1650
1570 K=
1580 FORI=1TO
P
1590 NEXT:RETURN
1600 GOSUB1570
1610 GOTO1630
1620 K=TOWN
1630 K=
1640 K=
1650 K=0:IFINJ(0)<
1660 RETURN
1670 K=0:IFNOT(
1680 IFAT=1
1690 RETURN
1700 K=
1 OR
1710 IFCA=1
1715 POKE
ENEXTA:FG=0
1720 PLAY"
8160:CR=
1730 EP=
1800
1230
1240 I
1250 F
1260 GOSUB20:I
A(AID),1:
1270 NEXTA
1280 RETURN
1289 '
1290 FORA=
=DD+DR+1
1300 S=
1810 DIMN
1819
1820 GOSUB
1829 '
1830 FORI=
1839
1840 DEFFN
1850 DEFFNQ
1860 DEFFNQ
1870 DEFFNJ
1880 DEFFNQ
```

```
1890 DEFFNBF(D)=W+32*D+D
1900 DEFFNMN(X,Y)=PEEK(X+Y*32+1024)
1910 DEF FNXY(D)=INT(D/32):DEF FNXD(D)=D-32*INT(D/32)
1920 DEF FNXE(D)=D-0 OR D-1 OR D-2 OR D-3
1930 DEF FNY=(E=0)+(E=1)*2+(E=2)*3+(E=3)*4
1940 DEF FNST(X)=PEEK(W+X)
1950 DEF FNA(X)=X*(X>=0)-X*(X<0)
1960 '
1970 '
1980 '
1990 '
2000 '
2010 '
2020 '
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Illustration: John Higgins

```
2460 FORI=1TO4:MOTORON:FORJ=1TO2500:NEXT:MOTOROFF:PRINTI;
2470 CSAVE"SPACE"+B$+CHR$(48+I):NEXT
2480 PRINT"DONE":STOP
2500 STOP
2509 'All messages
2510 ME$(0)="BLUUTON"
2520 ME$(1)="REDARE"
2530 ME$(2)="JUMP STARGATES"
2540 ME$(3)="@PRESS ENTER"
2550 ME$(4)="BEACON STAR@OCCUPIED"
2560 ME$(5)="NEEDS A@GUNSHIP@TO LAND"
2570 ME$(6)="INSUFFICIENT@ERUS"
2580 ME$(7)="MAXIMUM@FLEET"
2590 ME$(8)="LOST BASE@STARGATE"
2600 ME$(9)="NO DOCKS FREE"
2610 ME$(10)="NO STARGATES@AVAILABLE"
2620 ME$(11)="INDICATE@DIRECTION"
2630 ME$(12)="ENEMY IN@ORBIT"
2640 ME$(13)="MUST BE@IN ORBIT"
2650 ME$(14)="DOCKS@FREE  ERUS  MGA@"
2660 ME$(15)="MV@AT@DF"
2670 ME$(16)="PRODUCTION"
2680 ME$(17)="LANDING"
2690 ME$(18)="ATTACK"
2700 ME$(19)="HYPER JUMP"
2710 ME$(20)="COMBAT"
2720 ME$(21)="NO "
2730 ME$(22)=" YNA"
2740 ME$(23)="JUMP FAILED@SHIP IMPLODES"
2750 ME$(24)="DEAD AREA CLEAR@"
2760 ME$(25)=" WINS@ERUS "
2765 ME$(26)="PRESS Y @TO PLAY AGAIN"
2766 ME$(27)="STARGATE@CAPTURED"
2767 ME$(28)="MAX FLEET@NO CAPTURE"
2770 RT$(1)="ATTACKER@ELIMINATED"
2780 RT$(2)="ATTACKER@LOSES HALF"
2790 RT$(3)="ATTACKER@LOSES THREE"
2800 RT$(4)="ATTACKER@LOSES TWO"
2810 RT$(5)="BOTH LOSE TWO"
2820 RT$(6)="NO DAMAGE"
2830 RT$(7)="DEFENDER@LOSES TWO
2840 RT$(8)="DEFENDER@LOSES THREE"
2850 RT$(9) "DEFENDER@LOSES HALF"
2860 RT$(10)="DEFENDER@ELIMINATED"
2870 OD$=".........34679000000.23568990000.23457899000.22356789900.22345678990
12344668899.12234557899.11233447799.11123336799.11112225788"
```

```
2879 'Machine language to clear message area
2880 DATA GRAPH
2890 DATA C655108E1A60E7A0108C1E002DF839
2900 NA$="GRAPH":GOSUB330
2910 C=0:READA$:FORJ=1TOLEN(A$)/2:POKEGR+C,VAL("&H"+MID$(",",+A$,2*J,2)):C=C+1:NE
XTJ
2915 'This section devoted to M/L to print text in PMODE3,1 for the DRAGON. Use
of your computer has same difficulties
2920 CH$="0123456789ABCDEFGHIJKLMNP RSTUVWXY*"
2930 D$="EEEEEMEGEEMEEOEEOMGEEGGEGMEGMMGOEGOMMEEMEMMGEMGMMMEMMMOEEOEMOGMOOEOOM"
2940 S$="KNNNNNKDIDDDDKKNBKMMWWCDCBNKCEHOWCCWMVBBNLKMMVNNKWBBCDGMKNNKNNKKNNLBBVK
NNWNNNVNNVNNVKNMMMNKVNNNNNVWMMVMMWWMMVMMMKNMPNNKNNNWNNNKDDDDDKFCCCCOINOQSQONMMMM
MMWNURRNNNNTTRPPNVNNVMMMAAAAAAAVNNVQONKNMKBNKWDDDDDDNNNNNNKNNNHHDDNNNRRUNNNHDHNN
NNNKODD"
2950 DATA ML
2960 DATA 33761F34B6A1478143270SBD8B302003BDB3ED1F0110AE02ECA1ED40ECA1ED42ECA1ED
44ECA1ED44E684C0083404A647C6203DC306001F01E6463AAF484FAE40E6A4C14F2711E680C12A26
0431212050E1A427034C20EF31213420C6073D10AE44
2970 DATA 31ABC6073404A6A08041C6033DAE42308B342010AE48EC8183404048484848483404ABE0
E684C04058585858CB05EDA41F20C30020ED48352035045A26C73520EC468B02ED4635045A1026FF
7F324A39
2980 IF(PEEK(ML)=51)AND(PEEK(ML+1)=118)THEN3000ELSENA$="ML":GOSUB330
2990 C=0:FORI=1TO2:READA$:FORJ=1TOLEN(A$)/2:POKEML+C,VAL("&H"+MID$(",",+A$,2*J,2)
):C=C+1:NEXTJ,I
3000 AD$="":U=VARPTR(CH$):GOSUB3010:U=VARPTR(D$):GOSUB3010:U=VARPTR(S$)
3010 AD$=AD$+CHR$(PEEK(U+2))+CHR$(PEEK(U+3)):RETURN
3020 PMODE3,1:PCLS2:LINE(0,0)-(255,191),PSET,B:M=3^(.5):AX=63:AY=110:L=28
3029 'Draw seven hex
3030 L3=M*L:L2=M*L/2:LD=L/2
3040 X=AX:Y=AY:GOSUB3110
3050 Y=AY-L2*2:GOSUB3110
3060 Y=AY-L2*4:GOSUB3110
3070 X=AX-LD*3:Y=AY-L2:GOSUB3110
3080 Y=AY-L2*3:GOSUB3110
3090 X=AX+3*LD:Y=AY-L2:GOSUB3110
3100 Y=AY-3*L2
3110 LINE(X,Y)-(X-LD,Y+L2),PSET
3120 LINE-(X,Y+L3),PSET
3130 LINE-(X+L,Y+L3),PSET
3140 LINE-(X+L+LD,Y+L2),PSET
3150 LINE-(X+L,Y),PSET
3160 LINE-(X,Y),PSET
3170 RETURN
```

## DESCRIPTION OF VARIABLES & FUNCTIONS

PL: Whose move?
Set to 0 for Blue, 1 for Red.

BX,BY: Board Coordinates.
These are set for each piece during initialisation and will change in accordance with directions given by the player. BX and BY will always be both odd or both even numbers. See FNOD() which checks this.

PX,PY: Picture Coordinates.
The starting point for each DRAW command. Calculated using BX and BY.

BD: Board.
The address of the first byte of the Board. There is some waste since although the board has only 128 hex, 256 bytes are reserved. This is convenient for calculations.

FNBP(): Board Pointer.
This is a function which returns the address of a hex on the Board using BD, BX, BY, UX and UY. The arguments are 0 — points to the address of BX,BY — or 1 — points to an adjacent hex indicated by UX and UY.

FNBQ(): Contents of hex.
This function return the contents of the hex — e.g. PEEK(FNBP(X)).

W: Piece Table.
The address of the first byte of the piece table. 512 bytes are allowed allowing for expansion of NR and SZ.

NR: Maximum number of pieces on each side.
Set to 16.

SZ: Number of Parameters in piece table.
Set to 12.

QQ: Index of current piece.

FNPC(): Address of parameter for piece QQ.
This is a function which returns the address of a parameter for a piece. QQ must contain the index. The argument is the byte number (see XX,YY,TT etc).

FNMN(): Contents of piece table.
Similar to FNBQ().

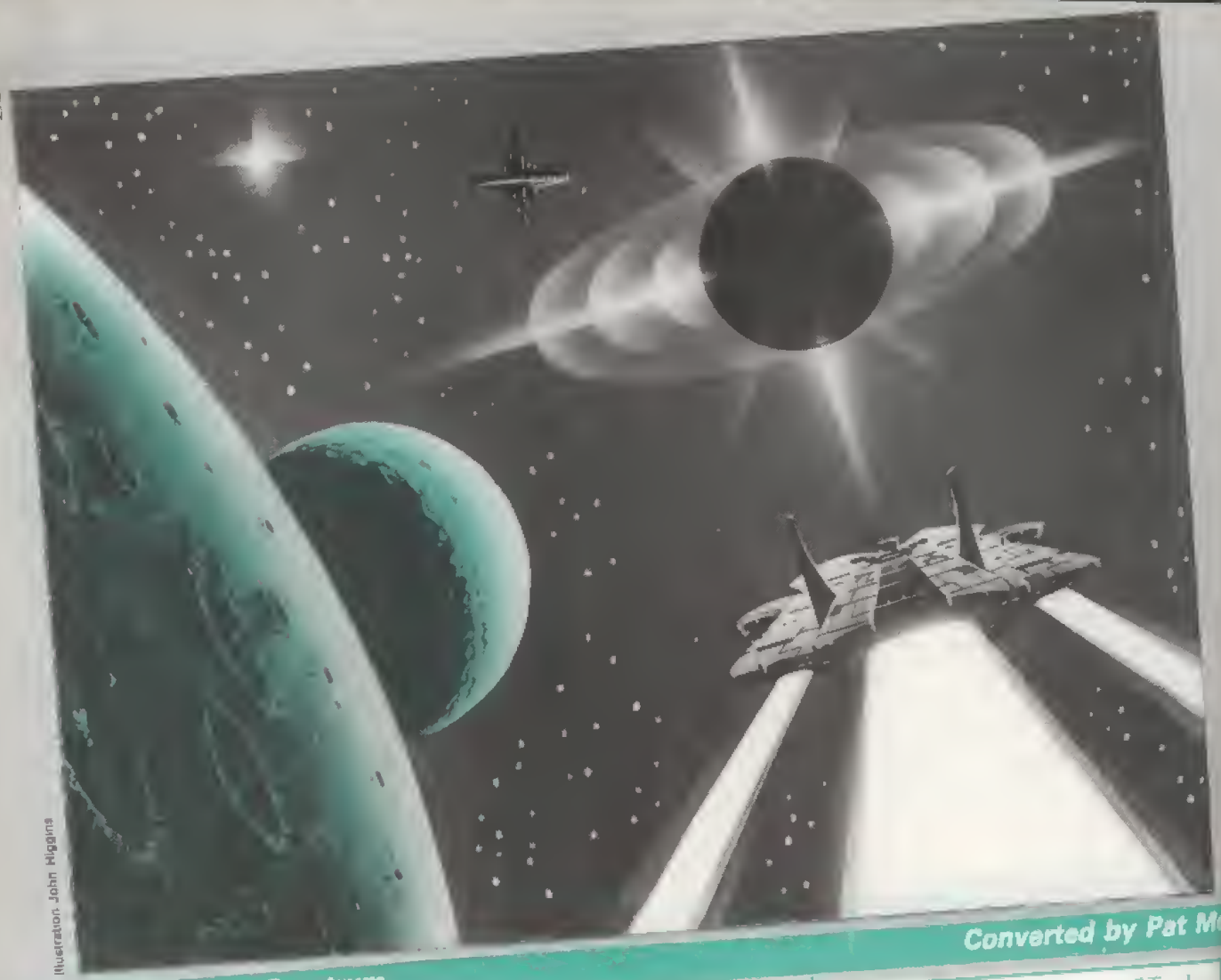

Illustration John Higgins

## Converted by Pat Mor

## Runs on a 48K Spectrum

**In order to resave this program, type as a direct command, "CLEAR" and then "ENTER" Secondly type, as a direct command, "POKE 24449,128, and then ENTER. Finally type SAVE "BSW" LINE 1 and save in the normal way.**

```
    1 DEF FN a(o)=qb+o
    2 DEF FN b(o)=PEEK FN s a(o
    3 DEF FN s o)=bd+26+(by+o+oy)
+bx)+o*ux
    4 DEF FN q(o)=PEEK FN s(o)
    5 DEF FN p(o)=w+52*99+o
    6 DEF FN *(q)=PEEK FN p(q)
    7 DEF FN x(o)=VAL "   1-1 1
    7 DEF FN x(o)=VAL "   1-1 1
 1 0 2-1 1-1-1 0-2" (a*4+2+o TO a+
4+2+o+1)
    8 DEF FN e(o)=o<0 OR o>14
    9 DEF FN f(o)=o<0 OR o>10
   10 DEF FN i(o)=PEEK (w+o)
   11 DEF FN j(o)=w+52*a(+o
   12 DEF FN n(o)=PEEK FN j(o)
   13 DEF FN r(o)=VAL "346790000
0.2356899000,2345678999000,   3567
89900.2234567899,1112   2679
2345578899,1123344779,1112   2*(I
9.11112225798" (o+12+b-7-NO   2*(I
NT (1/a)-2))
   14 DEF FN z(z)=INT (RND*z+1)
   15 CLEAR 63999: POKE 23659,0
POKE 24449,0 GO SUB 1790
   20 LET p(-1-o(   LET s=1+n   *p(
GO SUB 1140   GO SUB 520   GO SUB
1070   GO TO 20
```

```
   30 PRINT AT 19,0;          AT 1
0,0;   RETURN
   50 LET g=20   LET a$=INKEY$   IF
a$>"0" AND a$<"7" THEN LET a=VA
L a$   RETURN
   53 IF IN 64510=234 THEN POKE 2
3659,2   STOP
   55 IF a$<>   THEN RETURN
   60 GO SUB 150   GO TO 50
   70 LET bx=FN m(x+1   LET by=FN
m(yy)   RETURN
   80 LET f$=p$(3*p(+FN m(*1
   90 GO SUB 70
  100 LET px=bx*2+1   LET py=by*
  110 RETURN
  120 POKE FN p(xx) bx   POKE FN p
(yy),by   RETURN
  130 POKE FN p(fy),FN m(fy*2   P
OKE FN p(d),aj   RETURN
  140 FOR g=0 TO g-1   NEXT g   RET
URN
  150 GO SUB 80   GO SUB 140   GO S
UB 190   GO SUB 140   GO TO 1 0
  160 FOR v=1 TO 5   FOR f=160 TO
163   BEEP .01,.10   PRINT AT py,p
x;   PAPER 6;   INK cr;CHR$ f;   BEEP
.01,-15   PRINT AT py+1,px;   PAPE
R 6;   INK cr;CHR$ f   BEEP .01,-20
   NEXT f   NEXT v   RETURN
  170 GO SUB 80   PRINT INK 1+F
PAPER 6;AT py px;f$(1);AT py+1 p
x;f$(2)   LET k=1+p(   GO TO 200
  180 PRINT PAPER 6;   INK 4;AT y
px;" ";AT py+1 px;"  "   LET k=4
   GO TO 200
  190 LET CR=6   PRINT PAPER 6;   AT
```

```
py,px;" ";AT py+1,px;" "  LET i
k=0
 200 PLOT INK ik,px+8,160-py+8:
DRAW INK ik,7,0: RETURN
 210 BEEP 0.1: FOR i=0 TO hh: GO
SUB 230: NEXT i: IF cr<>6 THEN
LET cr=1+pl
 220 IF 99=hh THEN RETURN
 225 FOR i=hh+1 TO 99: GO SUB 23
0: NEXT i: RETURN
 230 LET qq=FN b(i): IF qq=0 THE
N RETURN
 235 GO SUB 70: GO SUB 30: PRINT
 FLASH cr=4; INK 8; PAPER 0; OVE
R 1;AT py,px;" ";AT py+1,px;" ":
RETURN
 250 LET na=-1: IF a=0 THEN LET
aj=na: RETURN
 253 LET ux=FN x(0): LET uy=FN x
(1): IF FN e(bx+ux) OR FN f(by+u
y) THEN LET aj=na: RETURN
 258 LET a=FN q(1)
 260 IF aj>2*nr OR aj=0 THEN RET
URN
 265 LET na=1-((aj<=nr)=(qq<=nr)
): RETURN
 270 BEEP 1,1: STOP
 280 GO SUB 100: PAPER cr: INK 0
-2*(cr<>6 AND px>1 AND py>1 AND
ATTR (py,px-1)=48): LET z$="▐"
IF px>1 AND py>1 AND cr=6 AND (A
TTR (py,px-1)=48 OR ATTR (py,px-
1)=-INT (ATTR (py,px-1)/8)*8=6) T
HEN LET z$="/": INK 0
 285 PRINT AT py,px-1;z$; INK 8;
 PAPER cr;" "; PAPER 8; INK cr;
 LET z$="▙": IF px<29 AND py<i A
ND cr=6 AND ATTR (py,px+1)>47 TH
EN LET z$="\": INK 0
 290 PRINT z$;AT py+1,px-1,; PAP
ER cr; INK 8-2*(cr<>6 AND px>1 A
ND py<17 AND ATTR (py+1,px-1)=48
): LET z$="▙": IF px>1 AND py<17
 AND cr=6 AND (ATTR (py+1,px-1)=
48 OR ATTR (py+1,px-1)=-INT (ATTR
 (py+1,px-1)/8)*8=6) THEN LET z$
="\": INK 0
 295 PRINT z$; INK 8; PAPER cr;"
 "; PAPER 8; INK cr; LET z$="▟":
 IF px<29 AND py<17 AND cr=6 AN
D ATTR (py+1,px+1)>47 THEN LET z
$="/": INK 0
 296 IF CR=6 THEN GO SUB 200
 298 PRINT z$: INK 7: PAPER 0: R
ETURN
 300 LET q=0: FOR i=0 TO dr
 310 LET q=q+1: GO SUB 390: IF b
x<3 OR bx>11 THEN GO TO 310
 315 POKE i+rd,q: NEXT i
 320 FOR i=0 TO dr: LET r=FN r(i
+1)-1: LET a=PEEK (r+rd): POKE r
+rd,PEEK (i+rd): POKE i+rd,a: NE
XT i: RETURN
 350 GO SUB 380: GO SUB 220
 360 IF cr<>6 THEN RETURN
 362 LET cr=4
 370 LET j=FN q(0)-50: IF j<0 TH
EN RETURN
 373 POKE FN s(0),j: IF j=49 THE
N GO SUB 100: GO TO 180
 376 RETURN
 380 LET q=PEEK (i+rd)
 390 LET by=2*INT (q/15)+INT ((q
-15*INT (q/15))/8): LET bx=2*q-1
5*by: RETURN
 490 LET G=100: GO SUB 140: GO T
O 30
 520 LET sp=pl: FOR p=0 TO 1: LE
T pl=p
 530 FOR q=1+nr*pl TO FN l(0): L
ET qq=q: IF FN m(xx)=99 THEN GO
SUB 560: GO TO 530
 550 NEXT q: NEXT p: LET pl=sp:
RETURN
 560 LET i=qq: IF qq=FN l(0) THE
N GO SUB 70: POKE FN s(0),0: GO
TO 570
 565 FOR q=qq+1 TO FN l(0): LET
qq=q: GO SUB 70: POKE FN s(0),qq
-1: FOR j=0 TO sz-1: POKE FN p(j
)-sz,FN m(j): NEXT j: NEXT q
 570 POKE w+pl,FN l(0)-1: LET qq
=i: RETURN
 580 FOR i=0 TO sz-1: POKE FN p(
i),0: NEXT i: GO SUB 120
 590 POKE FN p(tt),tp: FOR i=1 T
O 4: POKE FN p(i+2),s(tp,i): NEX
T i
 600 POKE FN p(nn),n(pl+1): LET
n(pl+1)=n(pl+1)+1: POKE FN s(0),
qq: POKE w+pl,FN l(0)+1: GO TO 1
70
 610 LET sq=qq: LET sx=bx: LET s
y=by: LET er=0: LET a=1: LET jj=
FN m(jp)
 620 GO SUB 250: IF na=0 AND FN
n(tt)=3 THEN GO TO 630
 623 LET a=a+1: IF a<7 THEN GO T
O 620
 626 PRINT AT 21,0;"Must be in o
rbit": GO TO 730
 630 LET sj=aj: FOR q=s TO FN l(
0): LET qq=q: IF sj<>qq AND FN m
(tt)=3 THEN LET tx=FN m(xx): LET
 ty=FN m(yy): GO SUB 80: GO TO 6
40
 635 GO TO 720
 640 LET f3=0: FOR a=1 TO 6: GO
SUB 250: IF na=1 THEN LET a=7: N
EXT a: GO TO 720
 643 IF aj=0 THEN LET f3=a
 646 NEXT a: IF f3=0 THEN GO TO
720
 650 LET a=f3: LET ux=FN x(a): L
ET uy=FN x(1): GO SUB 1020: LET
r=100+(jj-mn)*10
 660 IF r<0 OR r>100 THEN LET r=
(r>100)*100
 670 GO SUB 30: PRINT "JUMP star
gates";r;"%";"Press Y,N,B"
 680 GO SUB 50: GO TO 680+10*(a$
="Y")+40*(a$="N")+55*(a$="B")
 690 IF r<FN z(100) THEN LET s=0
: GO SUB 30: PRINT AT 21,0;"Jump
 failed. Ship implodes": LET er=
1: LET qq=sq: GO TO 1710
 700 LET tx=bx: LET ty=by: LET b
x=sx: LET by=sy: LET cr=6: GO SU
B 280: POKE FN s(0),0: LET bx=tx
: LET by=ty
 710 LET qq=sq: LET bx=bx+ux: LE
T by=by+uy: POKE FN s(0),qq: GO
SUB 120: GO TO 170
 720 NEXT q: PRINT AT 21,0;"No s
targates available"
 730 GO SUB 490
 735 LET er=2
 740 LET qq=sq: GO TO 80
 750 LET sx=bx: LET sy=by: LET e
r=4: LET bx=bx+ux: LET by=by+uy:
 LET tx=bx: LET ty=by: LET a=1:
LET f2=0
 760 GO SUB 250: IF na=0 AND FN
n(tt)=2 THEN LET f2=1
 765 IF na=1 AND FN n(tt)<>3 THE
N PRINT AT 21,0;"Enemy in orbit"
: LET er=12: GO TO 800
 770 LET a=a+1: IF a<7 THEN GO T
O 760
 775 IF f2=0 THEN PRINT AT 21,0;
"Needs a gunship to land": LET e
r=5: GO TO 800
 780 LET bx=sx: LET by=sy: LET c
r=6: GO SUB 280: POKE FN s(0),0
 790 LET bx=tx: LET by=ty: GO SU
B 280: LET tp=3: GO SUB 580: POK
E w+pl,FN l(0)-1: PRINT AT 21,0;
"Beacon star occupied": GO TO 49
0
 800 GO SUB 490: LET bx=sx: LET
by=sy: RETURN
 810 LET sq=qq: GO SUB 1000: IF
er THEN GO TO 980
 820 LET er=0: LET qq=s: IF FN m
(tt)<>3 THEN PRINT AT 21,0;"Lost
 base stargate": GO TO 980
 830 LET f1=0: FOR i=1 TO 6: LET
 qq=s: GO SUB 70: LET a=i: GO SU
B 250: IF aj THEN GO TO 870
 840 LET bx=bx+ux: LET by=by+uy
 850 LET f2=1: FOR a=1 TO 6: GO
SUB 250: IF na=1 THEN LET a=7: L
ET f2=0
 860 NEXT a: IF f2 THEN LET f1=f
1+1: LET k(f1)=i
 870 NEXT i
 880 IF f1=0 THEN PRINT AT 20,0;
```

```
"No docks free": GO TO 980
 890 GO SUB 30: PRINT "Docks fre
e :";f1;"ERU's :";c(pl+1)
 900 LET qq=s: GO SUB 70
 910 GO SUB 920: GO TO 910+20*(a
$="M")+30*(a$="G")+70+(a$="A")
 920 LET g=50: LET a$=INKEY$: IF
 a$<>"" THEN RETURN
 924 PRINT OVER 1;AT 22,0;,"pres
s M,G,A": GO SUB 140: GO TO 920
 930 LET cs=3: LET tp=1: GO TO 9
50
 940 LET cs=5: LET tp=2
 950 IF cs>c(pl+1) THEN GO TO 91
0
 954 BEEP .2,36: BEEP .2,24: LET
 c(pl+1)=c(pl+1)-cs: LET a=k(f1)
: LET bx=bx+FN x(0): LET by=by+F
N x(1): LET f1=f1-1
 960 LET qq=FN l(0)+1: GO SUB 58
0
 970 GO SUB 1000: IF er=0 THEN G
O TO 880
 980 GO SUB 490
 990 LET qq=sq: GO TO 80
1000 LET er=0: IF c(pl+1)<3 THEN
 LET er=6: PRINT AT 21,0;"Insuff
icient ERU's for more": RETURN
1005 IF FN l(0)=nr+nr*pl THEN LE
T er=7: PRINT AT 21,0;"Maximum f
leet size deployed"
1010 RETURN
1020 LET dx=ABS (sx-tx): LET dy=
ABS (sy-ty): LET i=dx/2+dy/2: LE
T j=ABS (dx/2-dy/2): LET k=dx+i:
 LET l=dx+j: LET mn=i+j
1030 IF mn>k THEN LET mn=k
1040 IF mn>l THEN LET mn=l
1050 RETURN
1070 IF dr<0 THEN GO TO 2300
1075 LET cr=6: LET i=dr: GO SUB
350: LET dr=dr-1: IF dr>=0 THEN
 LET i=dr: LET cr=1: GO SUB 350
1080 IF ss<>da THEN FOR j=0 TO 1
: LET i=d(j+1): IF i<>200 THEN G
O SUB 380: POKE FN s(0),0: LET c
r=6: GO SUB 280
1085 IF ss<>da THEN NEXT j
1090 FOR j=0 TO 1: LET d(j+1)=20
0
1100 LET ss=ss+1: IF ss=76 THEN
 LET ss=da
1110 LET i=ss: GO SUB 380: IF FN
 q(0)<>0 THEN GO TO 1100
1114 FOR a=1 TO 6: GO SUB 250: I
F aj<>49 AND aj<>99 THEN NEXT a:
 GO TO 1130
1120 LET d(j+1)=ss: POKE FN s(0)
,53: GO SUB 100: LET cr=4: GO SU
B 280
1130 NEXT j: RETURN
1140 IF FN l(0)=nr*pl THEN GO TO
 2500
1145 FOR q=s TO FN l(0): LET qq=
q: LET c(pl+1)=c(pl+1)+3*(FN m(q
,1)=3): POKE FN p(id),0: POKE FN
 p(fg),0: POKE FN p(aid),0: NEXT
 q: GO SUB 30
1150 PRINT AT 19,0; OVER 1;TAB 1
2,m$(pl+1);TAB 10;"press Enter":
 PAUSE 25: IF INKEY$<>CHR$ 13 TH
EN GO TO 1150
1160 LET a$="": LET qq=s: LET zz
=0
1170 GO SUB 30: LET mv=FN m(aa):
 IF mv=0 THEN GO TO 1210
1180 PRINT AT 19,0;m$(pl+1);TAB
14;"Moves";TAB 30;mv;t$(FN m(tt)
),FN m(nn);TAB 14;"Attack factor
s ";FN m(aa);"ERU's";TAB 8;c(pl
+1);TAB 14;"Defence factors ";FN
 m(dd)
1190 GO SUB 80: IF a$="C" THEN G
O TO 1280
1200 LET mf=1
1210 PRINT OVER 1;AT 22,0;,"Ente
r command (C,S,F,J,P,1-6)": GO
 SUB 50: GO TO 1210+30*(a$>"0" A
ND a$<"7")+70*(a$="C" OR a$="S")
+110*(a$="F")+20*(a$="J")+10*(a$
="P")
1220 GO SUB 30: PRINT "Productio
n": GO SUB 810: GO TO 1180
1230 GO SUB 30: PRINT "Hyper jum
p": GO SUB 610: GO TO 1180+100*(
er(2)+30*(er=1)
1240 GO SUB 250: GO SUB 30
1250 IF aj=49 AND FN m(tt)=1 THE
N PRINT "Landing": GO SUB 750: G
O TO 1210+100*(er=4)
1260 IF aj<>0 THEN FOR v=1 TO 50
: BEEP .01,-10: NEXT v: GO TO 1210
1270 POKE FN s(0),0: POKE FN s(1
),qq: GO SUB 190: LET bx=bx+ux:
LET by=by+uy: GO SUB 120: GO SUB
 170
1280 FOR a=1 TO 6: GO SUB 250: I
F na=1 THEN GO SUB 130: LET mf=1
00: GO SUB 30: PRINT AT 20,0;"At
tack ";FN n(nn)
1290 NEXT a: IF mf=100 THEN FOR
v=1 TO 36: BEEP .01,v: NEXT v: G
O SUB 30: LET zz=1
1300 IF a$<>"C" AND a$<>"S" THEN
 LET mv=mv-mf: IF mv>0 THEN GO T
O 1180
1310 FOR v=36 TO 1 STEP -1: BEEP
 .01,v: NEXT v: LET qq=qq+1: IF
qq<=FN l(0) THEN GO TO 1170
1320 GO SUB 30: IF NOT zz THEN P
RINT "No combat": RETURN
1330 PRINT "Combat": LET hx=0: F
OR q=s TO s+nr: LET qq=q: IF FN
m(fg)=0 THEN GO TO 1360
1340 IF FN m(fg)=1 THEN LET aj=F
N m(id): POKE FN j(aid),1: GO TO
 1360
1345 GO SUB 80: PRINT AT 20,0;"I
ndicate direction"
1350 GO SUB 50: GO SUB 250: IF n
a<1 THEN GO TO 1350
1355 PRINT AT 20,0;,: GO SUB 130
: POKE FN j(aid),1: BEEP .2,36:
BEEP .2,24
1360 NEXT q
1370 IF hx THEN LET cr=6: GO SUB
 210
1380 LET ap=0: LET qq=s: LET hh=
0
1390 IF FN m(fg)=0 THEN LET qq=q
q+1: GO TO 1390+2300*(qq>FN l(0)
)
1400 LET aj=FN m(id): POKE FN a(
0),aj: POKE FN j(aid),1: GO SUB
1430
1410 LET qq=qq+1: IF qq>FN l(0)
THEN GO TO 1440
1420 IF FN m(id)=aj THEN GO SUB
1430
1425 GO TO 1410
1430 POKE FN p(fg),0: LET hh=hh+
1: POKE FN a(hh),qq: LET ap=ap+F
N m(aa): RETURN
1440 LET aj=FN b(0): LET dp=FN n
(aa): GO SUB 1740: LET dp=dp+1
1450 LET a=ap/dp: LET b=INT a: I
F a>6 OR a<>6<1 THEN LET rt=1+9*(
a>6): GO TO 1470
1460 LET rt=FN r(FN z(10)): IF r
t=0 THEN LET rt=10
1470 LET cr=4: GO SUB 210: LET h
x=1
1480 GO SUB 30: PRINT 'r$(rt)
1490 LET G=250: GO SUB 140: GO S
UB 30
1500 GO SUB 1510+rt*10+20*(rt>2)
+20*(rt>4)+10*(rt>5)+20*(rt>8)+2
0*(rt>9)
1510 GO TO 1370
1520 LET k=99: GO TO 1580
1530 FOR e=1 TO hh: LET i=e: LET
 qq=FN b(i): LET j=FN m(dd): LET
 k=INT (.5+j/2)
1540 IF j<=k THEN GO SUB 1710
1545 IF j>k THEN POKE FN p(dd),j
-k
1550 NEXT e: RETURN
1560 LET k=3: GO TO 1580
```

```
1570 LET k=2
1580 FOR e=1 TO hh: LET i=e: LET
 qq=FN b(j): LET j=FN m(dd): IF
j<k THEN GO SUB 1710
1585 IF j>k THEN POKE FN p(dd),j
-k
1590 NEXT e: RETURN
1600 GO SUB 1570
1610 GO TO 1630
1620 RETURN
1630 LET k=2: GO TO 1650
1640 LET k=3
1650 LET i=0: LET qq=FN b(0): LE
T j=FN m(dd): IF j<k THEN GO SU
B 1710
1655 IF j>k THEN POKE FN p(dd),j
-k
1660 RETURN
1670 LET i=0: LET qq=FN b(0): LE
T j=FN m(dd): LET k=INT (.5*j/2)
1680 IF j<=k THEN GO SUB 1710
1685 IF j>k THEN POKE FN p(dd),j
-k
1690 RETURN
1700 LET k=99: GO TO 1650
1710 IF FN m(tt)=3 AND FN l(0)<p
t+nr+nr THEN GO TO 1730
1714 POKE FN a(i),0: GO SUB 80:
LET f2=0: FOR a=1 TO 6: GO SUB 2
50: IF FN n(tt)<>3 THEN NEXT a:
LET f2=50
1720 FOR v=1 TO 20: BEEP .01,10:
NEXT v: FOR v=1 TO 40: BEEP .02
,v: NEXT v: POKE FN s(0),f2: POK
E FN p(xx),99: LET cf=2: GO SUB
160: LET cf=6: GO SUB 280: IF f2
 THEN LET cf=2: GO TO 280
1725 RETURN
1730 GO SUB 30: PRINT AT 21,0;"S
targate captured": GO SUB 80: PO
KE FN p(xx),99: LET ip=3: LET qq
=FN l(0)+1: POKE FN a(i),qq: GO
TO 580
1740 LET f2=1: LET qq=hh: LET k=
0: FOR j=1 TO hh: LET qq=FN b(j)
: GO SUB 1760: NEXT j
1750 LET f2=0: LET qq=FN b(0): I
F FN m(tt)<>3 THEN RETURN
1760 GO SUB 70: FOR a=1 TO 6: GO
 SUB 250: IF na=f2 AND FN n(aid)
=0 THEN LET k=k+FN n(aa): POKE F
N j(aid),1: LET qq=qq+1: POKE FN
 a(qq),aj
1770 NEXT a
1780 RETURN
1790 RANDOMIZE : LET w=64000: LE
T bd=64500: LET fd=64800: LET da
=30: LET df=75: LET qb=64900
1791 PRINT AT 10,3;"BEACON STAR
WAR LOADED"
1792 PRINT AT 12,8;"PLEASE WAIT"
1800 LET s=1: LET sz=12: LET nf=
16: LET xx=0: LET yy=1: LET tt=2
 LET mm=3: LET aa=4: LET dd=5:
LET fg=10: LET id=7: LET aid=8:
LET nn=9: LET jp=6: LET ux=0: LE
T uy=0
1810 DIM p$(6,2): DIM k(6): DIM
m$(2,7): DIM t$(3,8): DIM s(3,4)
: DIM c(2): DIM d(2): DIM n(2):
DIM r$(10,20)
1820 FOR i=0 TO 159: READ x: POK
E USR "a"+i,x: NEXT i: GO SUB 30
00
1821 DATA 32,32,16,16,8,8,4,7,
4,8,8,16,16,32,32,192,  224,224,
248,240,248,248,252,255,  248,24
0,240,224,224,192,192,0,  0,0,62
,127,8,158,191,255,  191,158,8,1
27,62,0,0,0,  0,0,0,8,62,170,191
,255,  187,186,62,8,0,0,0,0,  0,
8,8,8,8,62,99,  99,62,8,8,8,8,
0,0,  0,0,24,126,255,255,255,
255,126,255,153,153,0,0,0,  0,0
,124,254,16,121,253,255,  253,12
1,16,254,124,0,0,0,  0,0,0,16,12
4,85,253,255,  221,93,124,8,0,0,
0,0,  69,144,54,68,169,66,89,145
,  132,41,132,69,16,138,73,149,
148,81,74,37,138,68,198,84,  80
,35,66,16,34,132,33,36
1830 FOR i=m TO qb: POKE i,0: NE
XT i
1990 LET q$="▝▗▘▖▝▗▘▖▝▗▘▖▝▗▘▖": FOR
i=1 TO 6: LET p$(i)=q$(i+2-1 TO
i+2): NEXT I: LET m$(1)="BLUUTON
": LET m$(2)="REDARE"
2000 FOR i=1 TO 10: READ r$(i):
NEXT i
2010 DATA "Attacker eliminated",
"Attacker loses half","Attacker
loses three","Attacker loses two
","Both lose two","No damage","D
efender loses two","Defender los
es three","Defender loses half",
"Defender eliminated"
2020 GO SUB 300: FOR i=1 TO 3: R
EAD t$(i),s(i,1),s(i,2),s(i,3),s
(i,4): NEXT i
2030 LET cf=0: LET qq=1: LET pl=
0: GO SUB 2040: LET qq=1+nr: LET
 pl=1: GO SUB 2040: GO TO 2090
2040 POKE m+pl,qq-1: LET n(pl+1)
=qq
2050 FOR i=1 TO 5: READ bx,by,ip
: GO SUB 580: LET qq=qq+1: NEXT
k: RETURN
2060 DATA "Miner",5,1,3,3,"Bunsh
ip",3,4,5,2,"Stargate",0,2,2,0
2070 DATA 0,8,3,1,7,1,1,9,2,0,5,
1,0,10,2
2080 DATA 14,8,3,13,7,1,13,9,2,1
4,6,1,14,10,2
2090 LET cf=2: LET df=da-1: FOR
i=0 TO df: GO SUB 350: POKE FN s
(0),50: NEXT i
2100 LET ss=da: FOR j=1 TO 10
2110 LET i=FN z(df): GO SUB 280:
 IF FN q(0)=99 THEN GO TO 2110
2120 POKE FN s(0),99: NEXT j: RE
TURN
2300 LET w$=m$(1+(c(2)>c(1))+(c(
1)=c(2)))+" WINS !!"
2310 IF c(1)=c(2) THEN LET w$="I
ts a draw !!"
2320 GO SUB 30: PRINT TAB 9;"De
ad area clear": TAB 10;w$
2330 PRINT OVER 1;AT 22,0;"  P
ress enter to play again"
2340 PAUSE 20: LET a$=INKEY$: IF
 a$<>CHR$ 13 THEN GO TO 2330
2350 POKE 23659,2: RUN
2500 GO SUB 30: PRINT m$(pl+1);"
 fleet wiped out."
2510 PRINT "m$(2-pl);" wins !!"
2520 GO TO 2330
3000 BORDER 0: PAPER 6: INK 0
3010 POKE 23658,8
3020 PRINT AT 0,0; PAPER 7; BRIG
HT 1; INVERSE 1;"THE BEACON STAR
 WAR : © C & VG."
3050 PRINT "▛ ▜ ▛ ▜ ▛ ▜ ▛ ▜ ▛ ▜ ▛ ▜
3050 FOR I=1 TO 8
3070 PRINT "▚▄▞ ▚▄▞ ▚▄▞ ▚▄▞ ▚▄▞
3080 PRINT "▛ ▜ ▛ ▜ ▛ ▜ ▛ ▜ ▛ ▜
3090 NEXT I
3100 PRINT "▚▄▞ ▚▄▞ ▚▄▞ ▚▄▞ ▚▄▞
3110 PLOT 0,24: DRAW 0,143: PLOT
 1,24: DRAW 0,143: INK 6: PLOT 2
46,24: DRAW 0,143: DRAW OVER 1;0
,-143: PLOT 247,24: DRAW 0,143:
DRAW OVER 1;0,-143
3120 PAPER 0: INK 7: GO SUB 30:
PRINT AT 21,10; FLASH 1;"PLEASE
WAIT": RETURN
4000 PRINT "Well there ain't any
": RETURN
```

# Pirates Polyps

**ARCADE ACTION IN THE HEAVENS. BY PAT NORRIS**

**RUNS ON A SPECTRUM IN 48K**

```
    2 PRINT  FLASH 1;AT 10,3;"STO
P THE TAPE"  PAUSE 200  CLS  FL
ASH 0
   5 BORDER 0  PAPER 0  INK 7  C
LS  LET z$=""

  10 OVER 0  LET md=0  LET np=0
  LET b=0  LET np=7  LET o=0  LE
T pc=0  LET k=0  LET y=k  LET z=
k  LET ts=2  LET t1=ts  LET ss=t
s  LET s1=ss
  15 FOR a=1 TO 50  PLOT INT (RN
D*247+8),INT (RND*151+18)  NEXT
a  PLOT 0,16  DRAW 255,0  PLOT 0
,16  LET e=5  LET a=0  FOR w=0 T
O 255  LET f=INT (RND*12+1): LET
 a=a+f  IF a>255 THEN  GO TO 25
  20 DRAW f,e  LET e=-e  NEXT w
  25 DIM e(7)  DIM f(7)  FOR a=1
 TO 7: LET e(a)=a*2  NEXT a  FOR
 a=1 TO 7  LET f(a)=INT (RND*29+
2): NEXT a
  30 FOR a=1 TO 7  PRINT AT e(a)
,f(a); OVER 1; INK 6;"B": NEXT a
  FOR a=0 TO 31  PRINT AT 0,a; I
NK 7;"F"  NEXT a  FOR a=1 TO 19
 PRINT AT a,0; INK 7;"K"  NEXT a
  35 PRINT AT 20,7; INK 4;"I";AT
 21,7;"J";AT 20,25;"I";AT 21,25
;"J"  PRINT AT 19,16; INK 5;"P";
AT 20,15;"CDE";AT 21,15;"FGH"
  40 OVER 1  IF ATTR (ss,ts)=3 T
HEN  LET nm=nm-1  LET md=md+1: G
O SUB 535  PRINT AT ss,ts; OVER
0; INK 7;" "
  45 RANDOMIZE  LET q=1
  50 IF k=1 THEN  LET h=INT (RND
*10+12)  GO TO 55
  51 IF y=1 THEN  LET h=INT (RND
*20+1)  GO TO 55
  53 LET h=INT (RND*30+1)
  55 LET nm=q  LET s=0: LET m=1
  LET g=19  LET i=INT (RND*9+1)
  60 GO SUB 230: LET pc=pc+1  GO
 SUB 505  REM **MAIN LOOP**
  65 IF pc>4 AND b=1 THEN  GO SU
B 425: LET pc=0
  70 IF pc>4 THEN  LET pc=0
  75 IF np=0 THEN  GO TO 550
  80 IF m=0 THEN  GO TO 125
  85 IF s=50 THEN  GO TO 165
  90 IF s=100 THEN  GO TO 145
  95 IF i=g THEN  LET s=50: PRIN
T AT g,h;"M";AT g,h;"N"  LET z=1
0*10  PRINT AT g,h; INK 7;"N";AT
 g,h; INK 3;"O": GO TO 120
 100 LET g=g-1  IF ATTR (g,h)=70
 AND g=s1 AND h=t1 AND b=1 THEN
 RANDOMIZE USR 32555  RANDOMIZE
USR 32505  GO SUB 455  LET b=0:
LET s=100  GO TO 140
 105 IF ATTR (g,h)=6 THEN  LET s
=100  RANDOMIZE USR 32555  GO TO
 140
 110 IF g=18 THEN  PRINT AT g,h;
 INK 3;"M"  GO TO 120
 115 PRINT AT g,h; INK 3;"M";AT
g+1,h; INK 7;"M"
 120 IF np=0 THEN  GO TO 550
 125 IF nm=0 THEN  GO TO 45
 130 GO SUB 230  GO SUB 210
 135 GO TO 60
 140 PRINT AT g,h;  INK 7;"B";AT
 g+1,h;"M";AT g,h;  BRIGHT 1;  INK
 2;"Q"  GO SUB 415  GO TO 120
 145 LET g=g-1  IF g<1 THEN  PRI
NT AT g+1,h;  BRIGHT 0;  INK 7;"Q"
  LET m=0  LET np=np-1  LET nm=n
m-1  IF np=0 THEN  GO TO 550
 150 IF m=0 THEN  GO TO 120
 155 PRINT AT g,h;  BRIGHT 1;  INK
 2;"Q";AT g+1,h;  BRIGHT 0;  INK 7
;"  "  GO TO 120
 160 PRINT AT g,h;  BRIGHT 0;  INK
 7;"B";AT g-1,h;"O";AT g,h;  BRIG
HT 1;  INK 2;"Q"  GO SUB 415  GO
TO 120
 165 LET d=g  LET t=h: LET g=g+1
 170 IF ATTR (g,h)=70 AND g=s1 A
ND h=t1 AND b=1 THEN  RANDOMIZE
USR 32555  RANDOMIZE USR 32505
GO SUB 455  LET b=0: LET s=100
GO TO 160
 175 IF ATTR (g,h)=6 THEN  LET s
=100  RANDOMIZE USR 32555: GO TO
 160
 180 IF ATTR (g,h)=4 THEN  GO SU
B 480  GO TO 120
 185 IF ATTR (g,h)=5 THEN  GO SU
B 480  GO TO 545
 190 IF g<20 THEN  PRINT AT g-1,
h; INK 7;"O";AT g,h; INK 2;  BRIG
HT 1;"L"  LET m=0  LET nm=nm-1
RANDOMIZE USR 32505  PRINT AT g,
h;  OVER 0;  INK 2;"  "  GO TO 120
 195 IF h>1 AND h<30 AND g<18 TH
EN  LET h=h+INT (RND*3-1)  PRINT
 AT g,h;  INK 3;"U";AT d,t;  INK 7
;"O"  GO TO 120
 200 PRINT AT g,h;  INK 3;"O";AT
d,t;  INK 7;"O"  GO TO 120
 210 IF INKEY$="z" AND k=0 THEN
 GO SUB 280: RETURN
 215 IF INKEY$="0" AND b=0 THEN
 GO SUB 375  RETURN
 220 IF INKEY$="m" AND y=0 THEN
 GO SUB 340  RETURN
 225 RETURN
 230 LET ts=ts+(INKEY$="p")-(INK
EY$="o")
 235 IF ts>30 THEN  LET ts=30
 240 IF ts<1 THEN  LET ts=1
 245 LET ss=ss+(INKEY$="s")-(INK
EY$="q")
 250 IF ss>18 THEN  LET ss=18
 255 IF ss<1 THEN  LET ss=1
 260 PRINT  OVER 0;AT 0,ts;  INK
7;"A";"k";AT 0,ts-1;"K"
 265 PRINT  OVER 0;AT ss-1,0;  IN
K 7;"K" AT ss,0;"A";AT ss+1,0;"K
"
 270 RETURN
 280 BRIGHT 0  PLOT 60,16  DRAW
 INK 8,(ts-7)*8,(19-ss)*8  RANDO
MIZE USR 32480  IF ATTR (ss,ts)=
6 THEN  GO TO 325
 285 IF ATTR (ss,ts)=66 THEN  GO
 SUB 300  GO TO 325
 290 IF ATTR (ss,ts)=3 THEN  GO
SUB 305  GO TO 330
 295 GO SUB 320  GO TO 330
 300 PRINT AT ss,ts;  INK 7;"O"
GO SUB 535: GO SUB 395  RETURN
 305 LET nm=nm-1: LET md=md+1
0 SUB 535
 310 IF s=0 THEN  PRINT AT ss,t
; INK 7;"M"  GO TO 320
 315 IF s=50 THEN  PRINT AT ss,
s;  INK 7;"O"
 320 PRINT AT ss,ts;  INK 2;  BRI
HT 1;"L";  RANDOMIZE USR 32505
ETURN
 325 LET t=0: LET d=t: RANDOMI
 USR 32505  PLOT  INVERSE 1;60,
6: DRAW  INK 8,(ts-7)*8,(19-ss)
8: RETURN
 330 PLOT  INVERSE 1;60,16  DR
  INK 8,(ts-7)*8,(19-ss)*8  GO
UB 335  RETURN
 335 PRINT AT ss,ts;  INK 7;  BRI
HT 0;"L"  RETURN
 340 BRIGHT 0: PLOT 204,16: DR
  INK 8,(ts-25)*8,(19-ss)*8  RA
DOMIZE USR 32480: IF ATTR (ss,t
)=6 THEN  GO TO 360
 345 IF ATTR (ss,ts)=66 THEN
 SUB 300  GO TO 360
 350 IF ATTR (ss,ts)=3 THEN
SUB 305  GO TO 365
 355 GO SUB 320: GO TO 365
 360 RANDOMIZE USR 32505  PLOT
INVERSE 1;204,16  DRAW  INK 8;(
s-25)*8,(19-ss)*8: RETURN
 365 PLOT  INVERSE 1;204,16  D
W  INK 8,(ts-25)*8,(19-ss)*8
 SUB 335  RETURN
 375 BRIGHT 0  PLOT  INK 5;132,
1  DRAW  INK 8,(ts-16)*8,(18-ss
*8  RANDOMIZE USR 32530
 380 IF ATTR (ss,ts)=6 THEN
DOMIZE USR 32555  GO SUB 460
TURN
 385 LET zz=5*5  PLOT  INVERSE
. INK 5;132,21  DRAW  INK 8,(ts
16)*8,(18-ss)*8: RETURN
 390 REM **RESTORE POLYPS**
 395 LET nm=nm-1: LET md=md+1
 400 FOR p=1 TO 7  IF e(p)=50
EN  LET e(p)=ss  LET f(p)=ts
INT AT ss,ts; INK 6;"B"  RETURN
 405 NEXT p  RETURN
 415 FOR p=1 TO 7  IF e(p)=g
f(p)=h THEN  LET e(p)=50
```

```
N
 420 NEXT p: RETURN
 425 PLOT  INVERSE 1; INK 5,132,
21  DRAW  INK 8;(t1-16)*8,(10-s1
*8): PRINT AT s1,t1, BRIGHT 0; I
NK 7,"B": RANDOMIZE USR 32555
 430 IF t1<16 THEN  LET t1=t1+1
 435 IF t1>16 THEN  LET t1=t1-1
 440 LET s1=s1+1: IF s1>18 THEN
LET s1=18
 445 IF s1=18 AND t1=16 THEN  LE
T b=0  LET np=np-1: LET npc=npc+
1: RETURN
 450 LET b=1: PRINT AT s1,t1; IN
K 6; BRIGHT 1;"B"
 455 PLOT  INVERSE 1; INK 5,132,
21  DRAW  INK 8;(t1-16)*8,(10-s1
)*8: RETURN
 460 LET b=1: PRINT AT ss,ts; IN
K 7,"B": PRINT AT ss,ts; INK 6;
BRIGHT 1,"B"  GO SUB 415: LET s1
=ss  LET t1=ts
 465 FOR p=1 TO 7: IF e(p)=s1 AN
D f(p)=t1 THEN  LET e(p)=50: RET
URN
 470 NEXT p: RETURN
 480 PRINT AT g-1,h; INK 7;"O";A
T g,h; INK 2; BRIGHT 1;"L";AT g+
1,h,"L"  RANDOMIZE USR 32505: RA
NDOMIZE USR 32580: PAUSE 40: RAN
DOMIZE USR 32580: IF h=7 THEN  L
ET k=1
 485 IF h=25 THEN  LET y=1
 490 IF k=1 AND y=1 THEN  GO TO
560
 495 LET m=0: LET nm=nm-1: LET z
z=10^10: PRINT  OVER 0;AT g,h;"
";AT g+1,h;" ": RETURN
 505 LET o=o+1: IF o>7 THEN  LET
 o=1
 510 IF e(o)=50 THEN  RETURN
 515 PRINT AT e(o),f(o); INK 7;"
B"
 520 LET f(o)=f(o)-1: IF f(o)<1
THEN  LET f(o)=31
 525 PRINT AT e(o),f(o); INK 6;"
B": RETURN
 535 IF ss=g AND ts=h THEN  LET
m=0: RETURN
 540 RETURN
 545 GO SUB 555: PRINT AT 18,0;
INK 6;"GAME OVER PROJECTOR DESTR
OYED": GO TO 565
 550 GO SUB 555: PRINT AT 18,0;
INK 7;"GAME FINISHED": GO TO 565
 555 OVER 0: PRINT AT 18,0;z$;AT
 19,0,z$;AT 20,0,z$;AT 21,0;z$:
RETURN
 560 GO SUB 555  PRINT AT 18,0,
INK 5;"GAME OVER LASERS DESTROYE
D": GO TO 565
 565 PRINT AT 20,0; INK 7;"POLYP
S SAFE =",AT 21,0;"POLYPS LOST =
",AT 20,18,"MISSILES";AT 21,18;"
DESTROYED ="
 570 PRINT AT 20,14; INK 7,npc,A
T 21,14,7-npc,AT 21,28,md
 575 PRINT AT 7,2,"Press ""P"" f
or another game"
 580 IF npc>0 AND npc<3 THEN  LE
T p$="Not very good are you!."
 585 IF npc>2 AND npc<6 THEN  LE
T p$="You need a little practice
."
 590 IF npc=6 THEN  LET p$="Not
bad at all."
 595 IF npc=7 THEN  LET p$="BRIL
LIANT play."
 600 IF npc=0 THEN  LET p$="YOU'
RE HOPELESS try tiddlywinks"
 605 PRINT AT 2,1,p$
 610 IF INKEY$="p" OR INKEY$="P"
 THEN  GO TO 620
 615 GO TO 600
 620 CLEAR : RUN 5
```

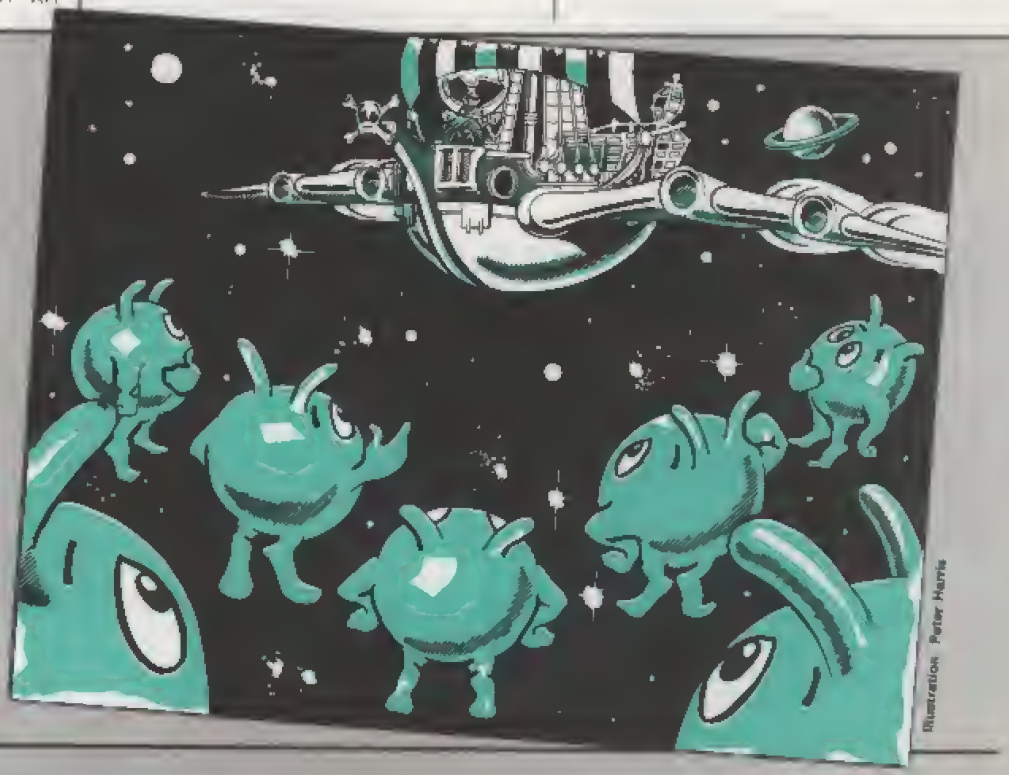

Illustration Peter Harris

Sun Polyps are one of the galaxy's many natural phenomena. Clouds of these small creatures drift in the outer atmospheres of planets, enriching and increasing it.

But planets fortunate enough to have these minute beings in orbit around them, now find the more mercenary elements of the galaxy eager to get their hands on them.

In Pirates and Polyps, it is your job to protect the polyps from a band of pirates.

You control a scanner and two laser bases on the surface of the planet and must stop pirate vessels from destroying and stealing polyps.

If both your laser bases or the projector are hit, then the game is lost. And if all the polyps are stolen the game is also over.

But you can collect the polyps yourself, by aiming your scanner at one and enticing it down to earth.

In order to collect a polyp or destroy a pirate vessel radar scanners at the top and left side of the screen must be lined up with the appropriate targets Key "Z" will fire the LEFT laser base, key "M" will fire the RIGHT laser base Key "O" will bring the PROJECTOR into operation.

TOP SCANNER
KEY O = LEFT
KEY P = RIGHT
SIDE SCANNER
KEY Q = UP
KEY A = DOWN

When a pirate vessel lands on a polyp it will be captured. The pirate will change to red and proceed to the top of the screen. You will lose the polyps if the pirate reaches the top of the screen.

But a "stolen" polyp can be saved by destroying the pirate with laser fire.

Pirates come in four different guises, so don't be fooled by them. If the pirate ships cannot find a polyp then they turn and head back to earth bent on destruction. If they manage to hit your scanners or a laser base, it will be destroyed.

If a laser base is destroyed then it is not usable. If the projector has locked onto a polyp, then the polyp will be drawn into the projector automatically, unless a pirate ship intervenes.

Laser fire destroys pirates but has no effect on the polyps. The projector has no effect on pirate vessels.

It's a hard game to win but the tactics will soon become clear when you've had a few turns at polyp-collecting. ▷▷▷

## Runs on a Dragon in 32K.

Converted by Ron Potk

On the Dragon, Pirates & Polyps has undergone a few changes in the use of keys.

It uses the arrow keys to move the laser base sights, rather than Q,A,O,P and B rather than O.

The bit configuration is used on the screen to identify pieces and to avoid confusion the projection flashes its beam.

```
1 CLS:PCLEAR8:CLEAR500,&H7000:GOSUB5000:GOTO200
2 FORJ=1TO4:IFPEEK(J+340)=223 THENONJ GOSUB7,6,4,5
3 NEXTJ:RETURN
4 TS=TS+10*(TS>10):PUT(TS-10,0)-(TS+15,7),AA,PSET:RETURN
5 TS=TS-10*(TS<240):PUT(TS-10,0)-(TS+15,7),AA,PSET:RETURN
6 SS=SS-8*(SS<144):PUT(0,SS-8)-(9,SS+15),DD,PSET:RETURN
7 SS=SS+8*(SS>8):PUT(0,SS-8)-(9,SS+15),DD,PSET:RETURN
8 GET(X,Y)-(X+9,Y+7),VV,G:RETURN
9 AW=FNAT(0):X=X+10:IFAW=9THENPUT(X,Y)-(X+9,Y+7),RR,PSET:RETURN ELSEPUT(X,Y)-(X+
9,Y+7),VV,PSET:RETURN
15 COLOR CR:LINE(65,159)-(5+TS,8+SS),PSET:RETURN
16 COLOR CR:LINE(185,159)-(5+TS,SS+8),PSET:RETURN
20 RESTORE
30 READA$:IFA$=NA$ THENRETURNELSE30
40 AY=20:M$="GAME OVER":GOTO61010
90 X=T1:Y=S1:GOTO100
92 X=T:Y=D:GOTO100
94 X=F(D):Y=E(D):GOTO100
96 X=H:Y=G:GOTO100
98 X=TS:Y=SS
100 ON ASC(P$)-64 GOTO105,115,120,105,105,105,105,105,130,105,140,145,150,155,16
0,165,170,175,105,180,105,185
105 RETURN
115 PUT(X,Y)-(X+9,Y+7),BB,PSET:RETURN
120 PUT(X,Y)-(X+29,Y+15),CC,PSET:RETURN
130 PUT(X,Y)-(X+9,Y+15),II,PSET:RETURN
135 PUT(X,Y)-(X+9,Y+7),JJ,PSET:RETURN
140 PUT(X,Y)-(X+9,Y+7),KK,PSET:RETURN
145 PUT(X,Y)-(X+9,Y+7),LL,PSET:RETURN
150 PUT(X,Y)-(X+9,Y+7),MM,PSET:RETURN
155 PUT(X,Y)-(X+9,Y+7),NN,PSET:RETURN
160 PUT(X,Y)-(X+9,Y+7),OO,PSET:RETURN
165 PUT(X,Y)-(X+9,Y+7),PP,PSET:RETURN
170 PUT(X,Y)-(X+9,Y+7),QQ,PSET:RETURN
175 PUT(X,Y)-(X+9,Y+7),RR,PSET:RETURN
180 PUT(X,Y)-(X+9,Y+7),TT,PSET:RETURN
185 PUT(X,Y)-(X+9,Y+7),VV,PSET:RETURN
190 '** START GAME **
200 PMODE3,1:PCLS2
201 MD=0:PS=0:B=0:NP=7:O=0:PC=0:K=0:YY=K:Z=K:TS=10:T1=TS:SS=8:S1=SS
205 COLOR1:LINE(255,176)-(0,191),PSET,BF:COLOR4:LINE(255,176)-(0,176),PSET:E=-5:
A=0:FORW=0TO255:F=RND(8)+4:A=A+F:IFA>255THEN215
210 LINE-(A,176+E),PSET:E=5*(E=0):NEXTW
215 FORA=1TO7:E(A)=16*A:F(A)=10*(RND(22)+2):NEXTA
220 A=0:FORO=1TO7:P$="B":GOSUB94:NEXTO:O=A:P$="K":Y=0:FORX=0TO240STEP10:GOSUB10
0:NEXTX:PSET(254,3,4):PSET(254,4,4):FORY=8TO152STEP8:X=0:GOSUB100:NEXTY
235 GOSUB5:GOSUB6:X=60:Y=160:P$="I":GOSUB100:GOSUB6090:SCREEN1,0
OSUB100:X=110:Y=160:P$="C":GOSUB100:GOSUB6090:SCREEN1,0
240 X=TS:Y=SS:IFFNAT(0)=20THENNM=NM-1:MD=MD+1:GOSUB735:P$="R":GOSUB99
245 R=RND(-TIMER):O=1
250 IFK=1THENH=10*(RND(15)+7):GOTO255
251 IFY=1THEN10*(H=RND(16)):GOTO255
253 H=RND(23)*10
255 NM=0:S=0:M=1:G=152:I=RND(9)*8
260 GOSUB2:PC=PC+1:GOSUB705
265 IFPC>4 AND B=1THENGOSUB625:PC=0
270 IFPC>4THENPC=0
275 IFNP=0THEN750
280 IFM=0THEN325
285 IFS=50THEN365
290 IFS=100THEN345
295 IFI=G THENS=50:P$="J":GOSUB96:P$="N":GOSUB96:Z=10^10:P$="O":GOSUB96:GOTO320
300 G=G-8:X=H:Y=G:GET(X,Y)-(X+9,Y+7),VV,G:IFFNAT(0)=12 AND G=S1 AND H=T1 AND B=1
```

```
 THENPLAYM4$:GOSUB655:B=0:S=100:GOTO340
305 X=H:Y=G:IFFNAT(0)=9. THENS=100:PLAYM1$:GOTO340
310 IFG=144THENP$="M":GOSUB96:GOTO320
315 PUT(H,G+8)-(H+9,G+15),VV,PSET:GET(H,G)-(H+9,G+7),VV,G:PUT(H,G)-(H+9,G+7),MM,
PSET
320 IFNP=0THEN750
325 IFNM=0THEN245
330 GOSUB2:GOSUB410
335 GOTO260
340 X=H:Y=G:PUT(H,G)-(H+9,G+7),RR,PSET:GOSUB8:PUT(H,G+8)-(H+9,G+15),RR,PSET:PUT(
H,G)-(H+9,G+7),QQ,PSET:GOSUB615:GOTO320
345 G=G-8:IFG<8THENPUT(H,G+8)-(H+9,G+15),VV,PSET:M=0:NP=NP-1:NM=NM-1:IFNP=0THEN7
50
350 IFM=0THEN320
355 X=H-10:Y=G+8:GOSUB9:X=H:Y=G:GOSUB8:PUT(H,G)-(H+9,G+7),QQ,PSET:GOTO320
360 PUT(H,G-8)-(H+9,G-1),RR,PSET:PUT(H,G)-(H+9,G+7),QQ,PSET:GOSUB615:GOTO320
365 D=G:T=H:G=G+8
370 X=H:Y=G:AT=FNAT(0):IFAT=12 AND G=S1 AND H=T1 AND B=1 THEN PLAYM4$:GOSUB655:B
=0:S=100:GOTO360
375 IFAT=9THENS=100:PLAYM3$:GOTO360
380 IFAT=26THENGOSUB680:GOTO320
385 IFAT=19THENGOSUB680:GOTO745
390 IFG>160THENX=H:Y=G-8:P$="R":GOSUB100:Y=Y+8:GET(X,Y)-(X+9,Y+7),UU,G:P$="L":GO
SUB100:M=0:NM=NM-1:PLAYM7$:PUT(X,Y)-(X+9,Y+7),UU,PSET:GOTO320
395 IFH>10ANDH<230 AND G<144 THEN H=H+10*(2-RND(3)):X=T-10:Y=D:GOSUB9:GET(H,G)-(
H+9,G+7),VV,G:PUT(H,G)-(H+9,G+7),QQ,PSET:GOTO320
400 P$="D":GOSUB96:P$="R":GOSUB92:GOTO320
410 IF(PEEK(340)=223) AND K=0 THEN480
415 IF(PEEK(340)=251) AND B=0THEN575
420 IF(PEEK(343)=247) AND YY=0 THEN540
425 RETURN
480 CR=3:GOSUB15:PLAYM1$:X=TS:Y=SS:AT=FNAT(0):IF AT=9 THEN525
485 IFAT=33THENGOSUB500:GOTO525
490 IFAT=20THENGOSUB505:GOTO530
495 GOSUB520:GOTO530
500 PUT(TS,SS)-(TS+9,SS+7),RR,PSET:GOSUB735:GOTO595
505 NM=NM-1:MD=MD+1:GOSUB735
510 IFS=0 OR S=50THEN PUT(TS,SS)-(TS+9,SS+7),RR,PSET
520 PUT(TS,SS)-(TS+9,SS+7),LL,PSET:PLAYM6$:RETURN
525 T=0:D=T:PLAYM5$:CR=2:GOSUB15:RETURN
530 CR=2:GOSUB15
535 PUT(TS,SS)-(TS+9,SS+7),RR,PSET:RETURN
540 CR=3:GOSUB16:PLAYM1$:X=TS:Y=SS:AT=FNAT(0):IFAT=9THEN560
545 IFAT=33THENGOSUB500:GOTO560
550 IFAT=20THENGOSUB505:GOTO565
555 GOSUB520:GOTO565
560 PLAYM1$:CR=2:GOTO16
565 CR=2:GOSUB16:GOTO535
575 COLOR 1:LINE(125,152)-(5+TS,SS+8),PSET:PLAYM1$
580 X=TS:Y=SS:IFFNAT(0)=9 THENPLAYM4$:GOSUB585:GOTO660
585 Z=20^20:COLOR2:LINE(125,152)-(5+TS,SS+8),PSET:RETURN
590 '
595 NM=NM-1:MD=MD+1
600 FORP=1TO7:IFE(P)=50 THENE(P)=SS:F(P)=TS:PUT(TS,SS)-(TS+9,SS+7),BB,PSET:RETUR
NELSENEXTP:RETURN
615 FORP=1TO7:IFE(P)=G AND F(P)=H THEN E(P)=50:RETURNELSENEXTP:RETURN
625 COLOR 2:LINE(125,152)-(5+T1,S1+8),PSET:P$="R":GOSUB90:PLAYM3$
630 T1=T1+10*(T1>120)-10*(T1<120):S1=S1-8*(S1<144)
645 IFS1=144 AND T1=120 THENB=0:NP=NP-1:PS=PS+1:RETURN
650 B=1:P$="T":GOSUB90
655 COLOR1:LINE(125,152)-(5+T1,S1+8),PSET:Z=20^20:COLOR2:LINE(125,152)-(5+T1,S1+
8),PSET:RETURN
660 B=1:P$="R":GOSUB98:P$="T":GOSUB98:GOSUB615:S1=SS:T1=TS
665 FORP=1TO7:IFE(P)=S1 AND F(P)=T1 THENE(P)=50:RETURNELSENEXTP:RETURN
680 G=G-8:P$="R":GOSUB96:G=G+8:P$="L":GOSUB96:G=G+8:GOSUB96:PLAYM5$:G=G-8:PLAYM4
$:IFH=60THENK=1
685 IFH=180THENYY=1
690 IFK=1 AND YY=1 THEN760
695 M=0:NM=NM-1:Z=20^20:P$="R":GOSUB96:G=G+8:GOSUB96:G=G-8:RETURN
705 O=O+1:IFO>7THENO=1
710 IFE(O)=50THENRETURN
720 P$="R":GOSUB94
730 F(O)=F(O)-10:IFF(O)<10THENF(O)=240
735 P$="B":GOTO94
735 IFSS=G AND TS=H THENM=0:RETURNELSERETURN
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Illustration, Peter Harris

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745 GOSUB40:AY=35:M$="PROJECTOR@DESTROYED":GOSUB61010:GOTO765
750 GOSUB40:GOTO765
760 GOSUB40:AY=35:M$="LASERS@DESTROYED":GOSUB61010
765 PLAYM2$:AY=60:M$="POLYPS SAFE"+STR$(PS)+"@"+"MISSILES@DESTROYED"+STR$(MD):GO
SUB61010
770 AY=100:M$="PRESS P FOR@ANOTHER GAME":GOSUB61010
780 IFPS=0THENM$="KEEP UP@THE PRACTICE"ELSEIFPS<3 THENM$="BETTER LUCK@NEXT TIME"
ELSEIFPS<6 THENM$="YOU NEED@MORE PRACTICE"ELSEIFPS=6THENM$="VERY GOOD"ELSEM$="BR
ILLIANT PLAY"
790 AY=130:GOSUB61010
800 FORI=1TO20000:IFINKEY$<>"P"THENNEXT:AU=1ELSEAU=0
810 PMODE3,5:SCREEN1,0:GOTO200
2000 GOTO61100
4999 'GETS
5000 POKE65495,0
5001 CLS:PRINT@260,"PLEASE WAIT ....."
5002 AR$=" "+CHR$(8)+CHR$(9)+CHR$(10)+CHR$(94)
5005 DIMAA(6),BB(2),CC(12),DD(6),II(4),KK(2),LL(2),MM(2),NN(2),OO(2),PP(2),QQ(2)
,RR(2),TT(2),UU(2),E(7),F(7),VV(2)
5006 '9=6=POLYP, 19=5=PROJ, 26=4=LASER, 20=3=MISS/TY, 33=2=WITH POLY,12=7=CAUGHT
 POLYP
5007 DEF FNAT(O)=8*PPOINT(X+2,Y+2)+PPOINT(X+4,Y+2)
5010 PMODE3,1:PCLS2:GOSUB6000:PMODE3,1
5015 NA$="AA":GOSUB20:GOSUB5100:GET(0,0)-(25,7),AA,G
5020 GOSUB5100:GET(0,0)-(9,7),BB,G
5030 GOSUB5100:GET(0,0)-(29,15),CC,G
5040 GOSUB5100:GET(0,0)-(9,23),DD,G
5045 GOSUB5100:GET(0,0)-(9,15),II,G
5055 GOSUB5100:GET(0,0)-(9,7),KK,G
5060 GOSUB5100:GET(0,0)-(9,7),LL,G
5065 GOSUB5100:GET(0,0)-(9,7),MM,G
5070 GOSUB5100:GET(0,0)-(9,7),NN,G
5075 GOSUB5100:GET(0,0)-(9,7),OO,G
5080 GOSUB5100:GET(0,0)-(9,7),PP,G
5085 GOSUB5100:GET(0,0)-(9,7),QQ,G
5086 GOSUB5100:GET(0,0)-(9,7),TT,G:PCLS2:GET(0,0)-(9,7),RR,G
5087 M1$="V10L25004AG":M2$="V10L25003ABCABCABCABC":M3$="V30L15001FA":M4$="V15L15
001F03AB"
5088 M5$="V31L255T25503A":M6$="L200;01V31BV28AV24GV20FV16DV10C£V5C":M7$="L20001V
31BV30FV29DV28GV27EV25CV23FV21CV19GV17BV15;L21002D£V13C£V11F£V9DV7AV5BV3EV1G"
5094 RETURN
5100 PCLS2:READI:J=0:K=0
5105 READF:IFF=0THENRETURN
5110 POKE&H600+K+J*32,F
5115 K=K+1:IFK=I THENJ=J+1:K=0
5116 GOTO5105
5120 '********
5125 DATA AA
5130 DATA4,85,85,85,85, 85,127,85,85, 85,93,85,85, 117,93,85,213, 117,93,85,213,
 85,93,85,85, 85,93,0
5134 'BBB - POLYP
5135 DATA 2,85,85,93,85,64,85,124,85,124,85,64,85,93,0
5139 'CDE - PROJECTOR
5140 DATA4, 85,170,169,85,89,105,150,149, 89,105,121,169,170,170,170,169, 106,17
0,170,169,90,170,170,101, 86,10,85,149,85,169,106,85, 85,170,169,85,86,170,170,8
5, 86,89,150,85,89,101,101,149, 89,101,101,149,101,165,105,101, 101,85,85,101,16
9,85,85,169,0
5144 'ODD SIDE SCANNER
5145 DATA 2,85,85,85,85,85,85, 93,85,93,85, 85,85,85,85,85,85,85,85, 117,85,117,
85,127,85,127,85,117,85,117,85, 85,85,85,85,85,85,85,85,93,85,93,0
5149 'III - LASER
5150 DATA 2,102,85,102,85,166,149,170,149,170,149,170,149, 153,149,106,85,89,85,
89,85,89,85, 106,85,102,85, 149,149,149,149,0
5159 'KKK
5160 DATA2,85,85,85,85,85,85,93,85,93,0
5164 'LLL-EXPLODE
5165 DATA 2,213,213,119,85,85,85,93,213, 221,85,85,85,119,85,213,213,0
5169 'MMM-MISSILE
5170 DATA2,85,85,85,85,93,85,93,85,119,0
5174 'NNN -TYFG
5175 DATA2,85,85,85,85,221,213,221,213,255,213,255,213,221,213,213,0
5179 'OOO - PIRATE
```

```
5180 DATA2,80,80,213,213,221,213,255,213,255,213,221,213,221,213,213,0
5184 'PPP    TOP OF PROJ
5188 DATA2,85,85,85,85,85,85,85,85,85,85,106,85,106,85,102,0
5189  'OOO - WITH POLYP
5190 DATA 2,221,213,127,85,111,85,127,85,127,85,64,85,93,0
5194  'CAUGHT POLYP
5198 DATA 2,85,85,81,85,77,85,124,85,124,85,64,85,93,0
5999 'INSTRUCTIONS
6000 PCLS2:GOSUB60000
6005 AY=10:M$="COMPUTER AND@VIDEO GAMES":GOSUB61010
6010 AY=40:M$="PRESENT":GOSUB61040
6020 AY=65:M$="PIRATES@ @AND@ @POLYPS":GOSUB61010
6030 AY=125:M$="BY PAT NORRIS":GOSUB61010
6040 AY=168:M$="CONVERTED BY@RON POTKIN":GOSUB61010
6043 COLOR4:LINE(10,52)-(246,140),PSET,B
6045 PMODE 3,5:PCLS2:FOR I=1104:POKE I,0:NEXT:SCREEN1,0:RETURN
6050 IFA=0 THENA=1:RETURNELSECLS:PRINT@258,"  PRESS I FOR INSTRUCTIONS -      AN
Y OTHER KEY TO PLAY"
6095 A$=INKEY$:IFA$=""THEN6095ELSEIFA$<>"I"THENRETURN
6100 CLS:M$="PIRATES AND POLYPS":GOSUB6900:M$="BY PAT NORRIS":GOSUB6900:M$="INST
RUCTIONS":GOSUB6900
6110 PRINT"OBJECTIVE":PRINT"  *TO STOP PIRATE VESSELS FROM"
6120 PRINT" DESTROYING YOUR BASE AND":PRINT" STEALING THE SUN POLYPS. IF":PRINT"
 BOTH YOUR LASER  BASES ARE":PRINT" HIT THEN THE GAME IS LOST."
6130 PRINT"  *WHEN ALL THE SUN POLYPS ARE":PRINT" COLLECTED OR STOLEN THE GAME
  FINISHES."
6140 PRINT"  *SCORES ARE SHOWN AT THE END":PRINT" OF THE GAME."
6150 GOSUB6910
6160 PRINT"  *IN ORDER TO COLLECT A POLYPS":PRINT" OR DESTROY A PIRATE THE":PRIN
T" RADAR SCANNERS AT THE TOP AND":PRINT" LEFT SIDE OF THE SCREEN MUST":PRINT" BE
 LINED UP ON THE TARGETS."
6170 PRINT"  *TOP SCANNER  - USE LEFT/RIGHT ARROWS":PRINT"  *SIDE SCANNER - USE
 UP/DOWN    ARROWS"
6175 PRINT"  *LEFT LASER   - USE Z"," *RIGHT LASER  - USE M":PRINT"  *PROJECTOR
    - USE B"
6180 GOSUB6910
6190 PRINT"  *WHEN A PIRATE LANDS ON A":PRINT" POLYPS, IT IS CAPTURED AND":PRINT
" THE PIRATE PROCEEDS TO THE":PRINT" TOP OF THE SCREEN. YOU WILL":PRINT" LOSE TH
E POLYPS IF IT REACHES":PRINT" THE TOP."
6200 PRINT"  *THE POLYPS MAY BE SAVED BY":PRINT" DESTROYING THE PIRATE WITH":PRI
NT" LASER FIRE."
6205 GOSUB6910
6210 PRINT"  *A LASER IS NOT USEABLE WHEN   HIT":PRINT"  *WHEN THE PROJECTOR IS"
:PRINT" LOCKED ONTO A POLYPS, THE":PRINT" POLYPS WILL BE DRAWN INTO":PRINT" THE
PROJECTOR.":PRINT"  *LASER FIRE HAS NO EFFECT ON   POLYPS."
6220 PRINT"  *THE PROJECTOR HAS NO EFFECT   ON PIRATES."
6230 PRINT:INPUT"PRESS ENTER TO START";A$
6300 RETURN
6900 L=LEN(M$):PRINTTAB(16-L/2);M$:RETURN
6910 PRINT:INPUT"PRESS <ENTER>";A$:CLS:PRINT:RETURN
60000 ML=&H7000
60200 CH$="0123456789ABCDEFGHIJKLMNP RSTUVWXY*"
60210 D$="EEEFEMEGEEMEEDEEDMGEEGGEGMEGMMGUEGOMMEEMEMMGEMGMMMEMMMOEEOEMOGMOOEQOM"
60220 S$="KNNNNNKDIDDDDKKNBKMMWWCDCBNKCEHOWCCWMVBBNLKMMVNNKWBBCDGMKNNKNNKKNNLBBV
KNNWNNNVNNVNNVKNMMMNKVNNNNNVWMMVMMWWMMVMMMKNMPNNKNNNWNNNKDDDDDKFCCCCOINOQSQONMMM
MMMWNURRNNNNTTRPPNVNNVMMMAAAAAAAVNNVQONKNMKBNKWDDDDDDNNNNNNKNNNHHDDNNNRRUNNNHDHN
NWNNKODD"
60230 DATA ML
60240 DATA 33761F34B6A14781432705BD8B302003BDB3ED1F0110AE02ECA1ED40ECA1ED42ECA1E
D44ECA1ED46E684C0083404A647C6203DC306001F01E6463AAF484FAE40E6A4C14F2711E680C12A2
6843121050E1A427034C20EF31213420C6073D10AE44
60250 DATA 31ABC6073404A6A08041C6033DAE42308B342010AE48EC8183404048484848483404ABE
0E684C0405858585858C805EDA41F20C30020ED48352035045A26C73520EC468B02ED4635045A1026F
F7F324A39
60260 IF(PEEK(ML)=51)AND(PEEK(ML+1)=118)THEN60280ELSENA$="ML":GOSUB20
60270 C=0:FORI=1TO2:READA$:FORJ=1TOLEN(A$)/2:POKEML+C,VAL("&H"+MID$(","+A$,2*J,2
)):C=C+1:NEXTJ,I
60280 AD$="":U=VARPTR(CH$):GOSUB60290:U=VARPTR(D$):GOSUB60290:U=VARPTR(S$)
60290 AD$=AD$+CHR$(PEEK(U+2))+CHR$(PEEK(U+3)):RETURN
60297 'PRINT ALPHA GRAPHICS
61010 I=INSTR(M$,"@"):IFI<>0THENX$=MID$(M$,I+1):M$=LEFT$(M$,I-1):GOSUB61040:M$=X
$:AY=AY+(10-4*(J=1)):GOTO61010ELSE61040
61035 MS$=AD$+CHR$(AX)+CHR$(AY)+M$:DEFUSR0=ML:US=USR0(VARPTR(MS$)):RETURN
61040 AX=INT(16-LEN(M$)):GOTO61035
```

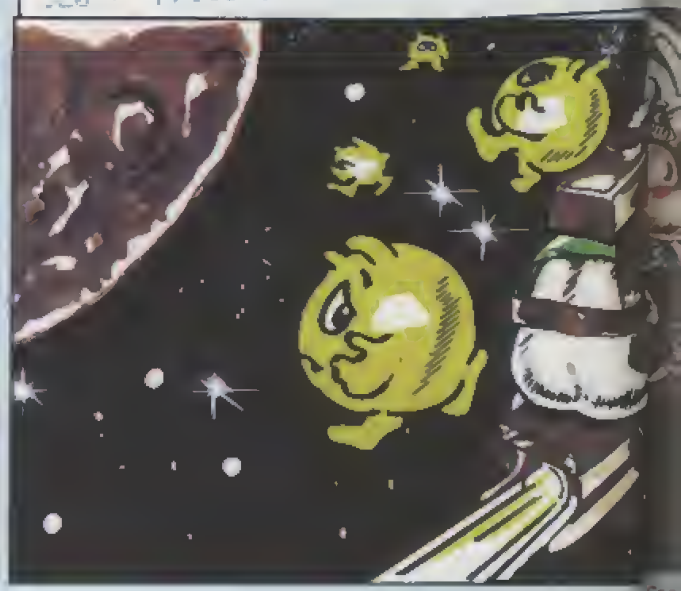
ILLUSTRATION: PETER HARRIS.

The PRINT statements in the line below include special control characters, which do not come in the printer listing.

```
LINE 550 AND 1040 - (CONTROL COMMA)
LINE 1000 - (CONTROL I)
LINE 1000 - (CONTROL A B C)
LINE 1000 - (CONTROL D E F)
LINE 1010 - (CONTROL G)
LINE 1010 - (CONTROL G)
LINE 1010 - (CONTROL H)
LINE 1010 - (CONTROL H)
LINE 1050 - 4 % (CONTROL COMMA)
LINE 160 - AS INTRIGUE LINE 160
LINE 1095 - AS INTRIGUE LINE 830
LINE 3050 - (CONTROL M)
LINE 5060 - 5 % (CONTROL COMMA)
LINE 6030 - (CONTROL COMMA)
LINE 7040 - (CONTROL COMMA)
LINE 11200 - (CONTROL COMMA)
```

```
10 REM PIRATES AND POLYPS - C&VG 1983
20 REM Author P.Norris
30 REM Atari conversion by S.Goodwin
100 DIM A$(1024):RT=PEEK(106):POKE 106,R
T-8:GRAPHICS 18:POKE 16,64:POKE 53774,64
110 PMB=(RT-8)*256:CHB=PMB+1024:VTAB=PEE
K(134)+PEEK(135)*256:ATAB=PEEK(140)+PEEK
(141)*256
120 OFFS=PMB-ATAB:HI=INT(OFFS/256):LO=OF
FS-HI*256:POKE VTAB+2,LO:POKE VTAB+3,HI
140 FOR J=708 TO J+3:READ A:POKE J,A:NEX
T J
150 DATA 56,234,120,74
170 FOR J=CHB+512 TO J+119:READ A:POKE J
,A:NEXT J
172 DATA 20,85,85,81,85,81,65,20
174 DATA 3,124,192,255,127,63,31,7
176 DATA 255,122,243,255,255,255,240,193
178 DATA 192,62,3,255,242,196,56,224
180 DATA 0,1,3,7,12,25,32,248
182 DATA 255,255,165,66,129,195,0,0
184 DATA 0,128,192,224,48,24,4,31
186 DATA 60,126,255,253,245,249,98,60
188 DATA 24,24,60,60,90,102,129,0
190 DATA 0,0,8,8,8,24,24,52
192 DATA 60,60,60,60,60,60,195,195
194 DATA 195,195,60,60,60,60,60,60
196 DATA 255,255,195,195,255,255,60,60
198 DATA 153,66,0,153,153,0,66,153
200 DATA 60,255,255,243,255,243,195,60
210 POSITION 6,1:? #6;"pirates":POSITION
 8,3:? #6;"and":POSITION 6,5:? #6;"POLYP
S!"
215 POSITION N,8:? #6;"COPYRIGHT C&VG 19
83":OPEN #1,4,N,"K:":POSITION 3,11:? #6;
"press any key":GET #1,A
220 POSITION N,N:? #6;"}":? #6;"  *** ca
ution ***":? #6:? #6;"THESE INSTRUCTIONS
":? #6;"WON'T BE AVAILABLE"
```

```
230 ? #6;"DURING THE GAME AND":? #6;"IT
MAY BE WISE TO":? #6;"MAKE A FEW NOTES"
:? #6
240 ? #6;"   press any key":GET #1,A:GR
APHICS N:POKE 106,RT-8:POKE 710,208:POKE
 756,RT-4:POKE 82,N:POKE 752,1:?
245 POKE 16,64:POKE 53774,64
250 ? :? " OBJECTIVE:  To stop pirate v
essels fromdestroying your base and steal
ing the   sun polyps."
260 ? :? "If both your laser bases are
t, or theprojector is hit then the game
is lost.":?
270 ? "When all the sun polyps are coll
ected   or stolen then the game finishes
":?
300 ? "In order to collect a polyp or d
estroy  a pirate vessel, you must use th
e"
310 ? "joystick to move the scanner to
the   appropriate target.":?
320 ? "Press the trigger to fire the l
```



```
r press the space bar to operate th
 "projector.":?
 "When a pirate vessel lands on a p
lyp,  the polyp will be captured. The p
ate  will change to RED and proceed";
 towards":? "the top of the scree
.":? :? "You will lose the polyp if the
pirate   reaches the top.":? :?
 ,"    press any key ":GET #1,A:? "
 'The polyp may be saved by destroy
 the pirate with laser fire.":? :?
 'polyp then the polyp will be draw
 into the projector automatically.
 :? "Laser fire destroys pirates but"
 'as no":? "effect on the polyps.
 'The projector has no effect again
 Pirate vessels.":? :? :? " COMPUT
R AND VIDEO GAMES hope that you "
50 DLIST=PEEK(560)+PEEK(561)*256:SCRN=P
EK(DLIST+4)+PEEK(DLIST+5)*256:FOR J=DLI
ST+8 TO J+17:POKE J,4
60 NEXT J:POKE J,34:POKE J+1,34:POKE J+
3,34:POKE J+4,6
80 COLM=184:COLS=120:POKE 704,COLS:POKE
706,4:POKE 707,4:POKE 708,234:POKE 1791
:POKE 709,74
90 A$(1)=" ":A$(1024)=" ":A$(2)=A$:BONU
S=200
0 FOR J=854 TO J+9:READ A:POKE PMB+J,A
NEXT J:FOR J=988 TO J+3:READ A:POKE PMB
J,A:NEXT J:J=1536
0 DATA 12,12,30,30,63,63,127,127,255,2
5,128,128,192,192
0 READ A:IF A<>-1 THEN POKE J,A:J=J+1:
TO 800
 DATA 216,238,194,2,238,195,2,206,255
,200,17,169,7,141,255,6,173,194,2,24,1
,9,141,194,2,141,195,2,76,98,228,-1
5 POKE 54279,RT-8:POKE 559,46:POKE 53
,3:POSITION 0,23:? "score 0    bonus
0";
0 OST=15:k=3:NP=7:TS=19:T1=TS:SS=12:S
=S:DIM B$(6),E(7),F(7):FOR A=1 TO 7:E(
=A*2:F(A)=INT(RND(0)*35+2)
0 POSITION F(A),E(A):? " ":NEXT A:TX=
:TY=575
```

```
1055 DATA 24,36,60,24,24,36,24,24,60,36,
24,24
1060 FOR J=1 TO 5:READ A:B$(J,J)=CHR$(A)
:NEXT J:A$(TY,TY+5)=B$
1065 DATA 126,66,66,66,66,126
1110 IF k=1 THEN H=INT(RND(N)*23+1):GOTO
 1130
1120 H=INT(RND(N)*36+1)
1130 NM=0:S=N:M=1:G=19:I=INT(RND(N)*9+1
):MY=733
1140 IF V>N THEN V=V-3:SOUND 3,N,8,V
1145 GOSUB 5000:PC=PC+1:GOSUB 6000
1150 IF PC>4 AND B=1 THEN GOSUB 7000:PC=
N
1160 IF PC>4 THEN PC=N
1170 IF NP=N THEN 30000
1180 IF M=N THEN 2000
1190 IF S=50 THEN 3000
1200 IF S=100 THEN 4000
1210 IF I=G THEN S=50:A$(MY,MY+3)=M2$:GO
TO 1350
1220 G=G-1:MY=MY-4:SG=PEEK(SCRN+H+G*40):
IF SG=64 AND G=S1 AND H=T1 AND B=1 THEN
9000
1230 IF SG=64 THEN S=100:GOTO 9500
1240 IF G=18 THEN GOSUB 1400:GOTO 1950
1250 A$(MY+4,MY+7)=S$:A$(MY,MY+3)=M1$:GO
TO 1950
1400 V=15:SOUND 3,N,8,V:A$(MY,MY+3)=M1$:
POKE 705,COLM:MX=46+H*4:POKE 53249,MX:RE
TURN
1950 IF NP=N THEN 30000
2000 IF NM=N THEN 1100
2010 GOSUB 5000:GOSUB 5500:POKE 764,255:
GOTO 1140
3000 G=G+1:MY=MY+4:A$(MY-4,MY-1)=S$
3005 IF H>1 AND H<36 AND G<18 THEN H=H+I
NT(RND(N)*3-1):MX=46+H*4:POKE 53249,MX
3010 SG=PEEK(SCRN+H+G*40):IF SG=64 AND G
=S1 AND H=T1 AND B=1 THEN 3400
3020 IF SG=64 THEN S=100:GOTO 4100
3030 IF SG=71 THEN GOSUB 9800:GOTO 1950
3040 IF SG=73 OR (SG>64 AND SG<71) THEN
GOSUB 9800:GOTO 30200
3070 A$(MY,MY+3)=M2$:GOTO 1950
3400 POKE 53250,N:POKE 53251,N:SOUND 1,N
,N,N:B=N:S=100:GOTO 4100
```

Illustration. Peter Harris

```
3500 POKE 53249,N:M=N:NM=NM-1:FOR J=1 TO
 150 STEP 5:SOUND N,J,8,15-J/10:NEXT J:P
OSITION H,6:? "  ":RETURN
4000 A$(MY,MY+3)=S$:G=G-1:IF G<1 THEN M=
N:NP=NP-1:NM=NM-1:POKE 53249,N:IF NP=N T
HEN 30000
4010 IF M=N THEN 1950
4020 MY=MY-4:A$(MY,MY+3)=M3$:GOTO 1950
4100 POSITION H,6:? "  ":A$(MY-4,MY-1)=S$
:A$(MY,MY+3)=M3$:GOSUB 9600:GOTO 1950
5000 BC=BC+1:IF BC>4 THEN BC=N:IF BONUS>
N THEN BONUS=BONUS-1
5002 POSITION 6,23:? SC;:POSITION 17,23:
? BONUS;" ";
5005 ST=STICK(N):IF ST=10 OR ST=9 OR ST=
5 OR ST=6 THEN ST=OST
5010 OST=ST:IF ST=15 THEN RETURN
5020 OY=TY:IF ST=7 THEN TS=TS+1:TX=TX+4:
IF TS>37 THEN TS=37:TX=TX-4
5030 IF ST=11 THEN TS=TS-1:TX=TX-4:IF TS
<1 THEN TS=1:TX=TX+4
5040 IF ST=14 THEN SS=SS-1:TY=TY-4:IF SS
<1 THEN SS=1:TY=TY+4
5050 IF ST=13 THEN SS=SS+1:TY=TY+4:IF SS
>18 THEN SS=18:TY=TY-4
5070 RETURN
5500 IF PEEK(764)=33 AND B=N THEN GOSUB
10000:RETURN
5510 IF STRIG(N)=N AND K>N THEN GOSUB 11
000
5520 RETURN
6000 O=O+1:IF O>7 THEN O=1
6010 IF E(O)=50 THEN RETURN
6020 POSITION F(O),E(O):? "  ":F(O)=F(O)-
1:IF F(O)<1 THEN F(O)=37
6030 POSITION F(O),E(O):? "  ":RETURN
7000 POSITION T1,S1:? "  ":IF T1<19 THEN
T1=T1+1
7010 IF T1>19 THEN T1=T1-1
7020 S1=S1+1:IF S1>18 THEN S1=18
7030 IF S1=18 AND T1=19 THEN B=N:NP=NP-1
:NPC=NPC+1:POKE 53250,N:POKE 53251,N:SOU
ND 1,N,N,N:SC=SC+50:RETURN
7040 B=1:POSITION T1,S1:? "  ":RETURN
9000 B=N:S=100:SOUND 1,N,N,N:POKE 53250,
N:POKE 53251,N:GOTO 9500
9500 POSITION H,6:? "  ":A$(MY+4,MY+7)=S$
:A$(MY,MY+3)=M3$:GOSUB 9600:GOTO 1950
9600 FOR J=255 TO N STEP -25:SOUND N,J,1
4,15:NEXT J:POKE 705,56:FOR P=1 TO 7:IF
E(P)=G AND F(P)=H THEN E(P)=50:P=8
9610 NEXT P:SOUND N,N,N,N:RETURN
9990 POKE 53249,N:A$(MY-4,MY-1)=S$:POSIT
ION H,6:? "  ":IF H=10 THEN K=K-1
9810 IF H=28 THEN K=K-2
9812 BONUS=BONUS-100:IF BONUS<N THEN BO
NUS=N
9815 FOR J=25 TO 220 STEP 2:SOUND N,J,8
15:SOUND 2,J+25,8,15:POKE 54277,RND(N)*
5:NEXT J:POKE 54277,N
9820 SOUND N,N,N,N:SOUND 2,N,N,N:IF K=N
THEN 30100
9830 M=N:NM=NM-1:POSITION H,6:? "  ":POS
ITION H,6+1:? "  ";:RETURN
10000 SOUND N,20,6,15:SG=PEEK(SCRN+TS+S
*40):IF SG=64 THEN SOUND 1,200,6,12:GOS
UB 10200:RETURN
10010 FOR J=1 TO 5:NEXT J:SOUND N,N,N,N
RETURN
10200 POKE 53250,121:POKE 53251,129:B=1
S1=SS:T1=TS:FOR P=1 TO 7:IF E(P)=S1 AND
F(P)=T1 THEN E(P)=50:P=8
10210 NEXT P:SOUND N,N,N,N:RETURN
11000 FOR J=-14 TO 14 STEP 4:SOUND N,20
-J*J,10,15:NEXT J:SG=PEEK(SCRN+TS+SS*4
11010 SOUND N,N,N,N:IF TS<>H OR SS<>6 T
HEN RETURN
11100 POKE 704,N:A=121:FOR J=1 TO 20:PO
KE 705,RND(N)*255:SOUND N,A,8,15:IF A=1
 THEN A=243:GOTO 11110
11102 A=121
11110 NEXT J:POKE 53249,N:SOUND N,N,N,N
NM=NM-1:M=N:MD=MD+1:POKE 704,COLS:SC=SC
10:IF A$(MY,MY+3)=M3$ THEN 11200
11120 A$(MY,MY+3)=S$:POKE SCRN+TS+SS*4
56:RETURN
11200 FOR P=1 TO 7:IF E(P)=50 THEN E(P)
SS:F(P)=TS:POSITION TS,SS:? "  ":P=8
11210 NEXT P:A$(MY,MY+3)=S$:RETURN
30000 SC=SC+BONUS:GOSUB 30300:? #6;"
GAME FINISHED":GOTO 30400
30100 GOSUB 30300:? #6;"GAME OVER - ":?
#6;"lasers destroyed":GOTO 30400
30200 GOSUB 30300:? #6;"GAME OVER - ":?
#6;"projector destroyed":GOTO 30400
30300 FOR J=N TO 3:SOUND J,N,N,N:POKE 5
24+J,N:NEXT J:GRAPHICS 18:RESTORE 150
30305 POKE 16,64:POKE 53774,64:FOR J=7
 TO J+3:READ A:POKE J,A:NEXT J:RETURN
30310 ? #6:? #6;"     score ";SC:? #6
30320 ? #6;"pirates blasted ";MD:? #6:?
#6:RETURN
30400 GOSUB 30310:? #6;"     PRESS STA
RT":? #6;"     TO PLAY AGAIN":POKE 764,25
30410 FOR J=1 TO 10:NEXT J:IF PEEK(5327
)=7 THEN 30410
30420 RUN
```

## Runs on a Vic-20 in 3.5K.

Converted by Paul Ja

Type in the first part of the program and save it before running. Make sure you do not alter anything, especially the "load" part of the program.

Save the second part of the program after the first and save it as "&POLYPS" in caps without a space.

When using the program, load and run the first part and leave the Play button on the cassette recorder down.

A lot of gibberish will appear on the screen which is the machine code to be used in the second part of th program.

When the second part is loaded, the cursor should b flashing next to the word "RUN". Press the return butto and the game will begin.

Do not clear the screen or change the display or th game will crash. The game runs on a standard Vic-2 with a joystick.

```
10 POKE56,28:POKE52,28:CLR
11 PRINT"▯7 SUN POLYPS FLOAT    ACROSS THE SCREEN. A  BLUE PIRATE SHIP IS"
12 PRINT"TRYING TO STEAL THEM. YOU HAVE 2 LASER BASES& A PROJECTOR.IF BOTH"
13 PRINT"BASES OR THE PROJECTORARE HIT,THE GAME ENDS.PLACE YOUR LASER SIGHT"
14 PRINT"OVER THE PIRATE & FIRE(USING JOYSTICK).ALSO DO THE SAME TO COLLECT"
15 PRINT"POLYPS.                    SCORING IS UNUSUAL &  YOUR OWN TACTICS FOR"
16 PRINT"HIGH SCORES MUST BE   USED.▯▯▯PRESS ANY KEY":GOSUB25
17 GETA$:IFA$=""THEN17
18 PRINT"▯SCORES WORK LIKE THIS-":PRINT:PRINT"BLUE PIRATE HIT-":PRINT
19 PRINT"NUMBER OF LASER BASES *NUMBER OF POLYPS.":PRINT
20 PRINT"RED PIRATE HIT-":PRINT:PRINT"DOUBLE ABOVE SCORE":PRINT
21 PRINT"POLYP RESCUED-":PRINT:PRINT"NUMBER OF PIRATES HIT *NUMBER OF POLYPS"
22 PRINT"▯▯▯▯PRESS ANY KEY TO BEGIN":GOSUB25
23 GETA$:IFA$=""THEN23
24 PRINT"▯PLEASE WAIT":GOTO37
25 FORI=1TO10:GETA$:NEXT:RETURN
37 FORI=0TO463:POKE7168+I,PEEK(32768+I):NEXT
38 FORI=0TO111:READPD:POKE7432+I,PD:NEXT
39 POKE36879,13:POKE36878,7*16
40 DATA3,61,246,212,81,132,97,24,255,85,0,130,40,105,20,85,192,124,159,23,69,18,
73,36
50 DATA6,1,0,3,13,52,16,84,20,150,235,170,105,20,0,0,144,64,0,192,112,28,4,21,12
,63,247
60 DATA255,190,186,40,32,40,40,170,170,190,150,130,130,231,129,129,0,0,129,129,2
31
70 DATA0,0,0,0,12,59,213,148,0,0,0,0,240,140,27,97,0,0,0,0,0,12,51,222,48,252,18
4,168
80 DATA16,16,220,84,20,52,60,23,142,37,164,9
90 PRINT"▯":FORI=1TO21:READM$:POKE36879,INT(I/3)+72:PRINT"▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯▯
▯ ";M$
100 FORDE=1TO300:NEXTDE,I
105 FORDE=1TO3000:NEXTDE
110 DATA"▯▯ ◥◤ ▼◥  |  ◤◥"
120 DATA"▯▯ ■▞■ ■▞■ ▞|■▞■ ■▞■ ▞■  ▞■▜▞■"
130 DATA"▯▯  ◤▞| ◤▞  ■▞■ ▞  ▜▞▛"
140 DATA"▯▯ ■  ▞| ◥■▞■ ■▞■ ▞■  ▜▛"
150 DATA"▯▯ ■  ▞|▜▞|■▞■ ■▞■ ▞■  ▞◥■"
160 DATA"▯▯ ■  ▞|■▞|■▞■ ■▞■ ▞  ▜▞◤"
180 DATA"     ▞◤ ◥◥| ▜▛     "
190 DATA"     ▞■ ■▞|  |■▞■     "
200 DATA"     ▞■ ■▞|  |■▞■     "
210 DATA"     ▞■ ■▞|  |■▞■     "
220 DATA"     ▞■ ■▞|  |■▞■     "
230 DATA"     ▞■ ■▞|▜▞| ◤     "
250 DATA" ▞▞  ▼◥■▞■ ▞| ▼ ▛ "
260 DATA" ▞▞ ■▞|■▞|■▞■ ▞|■▞|▜▞■ "
270 DATA" ▞▞  ◤▞■ ▞|■◥▞◤ ◤▞▜▛  "
280 DATA" ▞▞ ■  ▞■ ▞|■  ▞■ ▞■  ▜▛ "
290 DATA" ▞▞ ■  ▞■ ▞|■  ▞■ ▞■  ▞◥■  "
300 DATA" ▞▞ ■  ◥▞◤▞  |■▞■  ▜▞◤ "
320 DATA"■BY PAUL JAY.ADAPTED"
330 DATA"▮▮FROM THE SPECTRUM GAME"
340 DATA"■BY P.W.NORRIS."
400 PRINT"▯"
419 FORI=7966TO8175:READO:POKEI,O:NEXT
420 DATA169,15,141,14,144,120,169,82,141,20,3,169,3,141,21,3,88,96,10,15,16,64,1
60,0
421 DATA162,222,173,78,3,201,10,176,9,238,78,3,238,10,144,76,116,3,140,10,144,23
6,78,3
```

▷▷▷

## VIC-20 part 2

```
422 DATA208,6,140,78,3,142,10,144,173,79,3,201,25,176,9,238,79,3,238,11,144,76,1
46,3
423 DATA140,11,144,236,79,3,208,6,140,79,3,142,11,144,173,80,3,201,16,176,9,238,
80,3
424 DATA206,12,144,76,176,3,140,12,144,236,80,3,208,6,140,80,3,142,12,144,173,80
,3,201
425 DATA64,176,28,238,81,3,173,81,3,201,22,208,7,169,176,141,13,144,240,25,201,4
3,208
426 DATA21,169,160,141,13,144,240,14,140,13,144,236,81,3,208,6,140,81,3,142,13,1
44,76
427 DATA191,234,169,0,141,14,144,120,169,191,141,20,3,169,234,141,21,3
428 DATA88,96,0,0,0,0,0,0,0,0,0,0,0,0,132,143,142,167,148,160,144,129,142,137,13
1,161
500 PRINT"[LOAD]"CHR$(34)"&POLYPS"CHR$(34)
510 PRINT"[RUN]"
520 POKE198,3:POKE632,19:POKE633,13:POKE634,13
530 NEW

READY.
```

## VIC-20 continued

```
0 IFPEEK(193)<>66THENFORI=1TO191:POKE827+I,PEEK(7965+I):NEXT
5 POKE193,66
6 DIMP(7),L(7)
20 CLR:SYS828:D=888:E=847:SN=200:DU=10:GOSUB7000
100 POKE36879,13:POKE36878,(16*7)OR(PEEK(36878)AND15):POKE36869,255:SC=0
110 P=39:SH=40:SS=41:GU=45:R=10:BL=14:PU=12:BC=BL:C=30720:BD=1:CY=11:K=10:LO=811
9:PC=0
120 GC=2:DP=0:CP=0:Q=7:RESTORE:FORI=1TO7:READP(I),L(I):NEXT:PRINT"[CLR]"
130 D1=33:D2=34:D3=35:WH=0:L=0:M=0:B=0
140 G=7680:K1=37139:K2=37154:X=10:Y=19:T=32:O=1:U=37137:V=37152
150 DATA7723,7701,7754,7745,7808,7789,7841,7833,7886,7877,7937,7921,7949,7943
160 FORI=8142TO8163:A=INT(RND(1)*3)+42:POKEI,A:POKEI+C,R:NEXT
162 POKE8121,9:POKE8121+C,1:POKE8140,9:POKE8140+C,1
165 POKE8143,GU:POKE8143+C,9:POKE8162,GU:POKE8162+C,9
170 A=33:FORI=8129TO8131:POKEI,A:POKEI+C,CY:A=A+1:NEXT
180 A=36:FORI=8151TO8153:POKEI,A:POKEI+C,CY:A=A+1:NEXT
1000 IFQ=0ANDDP=0THEN1020
1010 GOSUB2000
1020 IFDP=0THENGOSUB3000
1040 M=B:A=INT(RND(1)*3)+0:ONAGOTO1050,1070,1080
1050 K=K-O:IFK<0THENK=0
1060 GOTO1080
1070 K=K+O:IFK>20THENK=20
1080 A=INT(RND(1)*2)+0:ONAGOTO1090,1110
1090 L=L+BD:IFL>20THENL=20:BD=-O
1100 IFL<0THENL=0:BD=O:IFBC=RTHENGOSUB1190
1110 B=22*L+K:WH=PEEK(G+B)
1120 IFWH=D1ORWH=D2ORWH=D3THENPOKEG+M,T:POKEG+B,SH:POKEG+B+C,BC:GOSUB9000:GOTO080
00
1130 IFWH=3THENGC=GC-O
1140 IFWH=PANDBC=BLANDDP=0THENBC=R:BD=-O:DU=10:SN=222:D=948:E=949:GOSUB7000:GOSU
B1170
1150 POKEG+M,T:POKEG+M+C,O:POKEG+B,SH:POKEG+C+B,BC
1160 GOSUB4000:GOTO1000
1170 FORI=OTOQ:IFP(I)=G+BTHENPC=I:POKEP(I),T:RETURN
1180 NEXT
```

```
1190 P(PC)=P(Q):L(PC)=L(Q):Q=Q-Q:IFQ=0THEN8000
1200 BC=BL:PC=0:RETURN
2000 N=INT(RND(1)*Q)+Q:IFN=CPANDQ<>1THEN2000
2012 IFN=PCTHEN2000
2015 IFQ=1ANDBC=RTHENRETURN
2020 POKEP(N),T:P(N)=P(N)-Q:IFP(N)=L(N)THENP(N)=P(N)+22
2030 POKEP(N),P:POKEP(N)+C,PU:RETURN
3000 POKEJ,T:J=J+22:IFJ>LOTHENDP=0:SC=SC+PH*Q:GOSUB6000:GOSUB3040:RETURN
3020 D=948:E=849:SN=200:DU=50:GOSUB7000:POKEJ,P:POKEJ+C,CY
3030 RETURN
3040 P(CP)=P(Q):L(CP)=L(Q):Q=Q-Q:IFQ=0THEN8000
3050 CP=0:RETURN
4000 POKEK1,0:POKEK2,127:RESTORE:S=PEEK(U):S0=((SAND4)=0):S1=((SAND8)=0)
4020 S2=((SAND16)=0):F=((SAND32)=0):S=PEEK(V):S3=((SAND128)=0):POKEK2,255:POKEK1
,128
4030 W=Z
4040 IFS2THENX=X-O:IFX<0THENY=0
4050 IFS3THENX=X+O:IFY>21THENX=21
4060 IFS0THENY=Y-O:IFY<1THENY=O
4070 IFS1THENY=Y+O:IFY>19THENY=19
4080 Z=22*Y+X
4085 IFF=-OTHENGOSUB5000
4090 POKEG+W,T:POKEG+Z,SS:POKEG+C+Z,O:RETURN
5000 FORI=OTOO:IFP(I)=G+ZTHENIFDP=0THENJ=P(I):DP=O:CP=I:RETURN
5010 NEXT:IFG+Z<>G+BORGC<=0THENRETURN
5020 D=858:E=846:DU=40:SN=200:GOSUB7000:D=888:E=847:GOSUB7000:D=918:E=848:GOSUB7
000
5030 IFBC=BLTHENSC=SC+GC*Q:PH=PH+1:GOTO5050
5040 SC=SC+GC*Q*2:PH=PH+2:PC=0
5050 GOSUB6000:BC=BL:BD=O:L=0:K=10:B=0:RETURN
6000 PRINT"[redacted]SCORE ";SC:RETURN
7000 POKED,DU:POKE853,SN:POKEE,SN:RETURN
8000 PRINT"[redacted]YOUR SCORE WAS";SC
8006 IFSC>HITHENHI=SC
8007 PRINT"■THE HIGHEST IS ";HI
8008 PRINT"■WOULD YOU LIKE ANOTHER GAME"
8010 FORI=1TO10:GETG$:NEXT
8020 GETG$:IFG$=""THEN8020
8030 IFG$="Y"THEN100
8040 END
9000 HH=36864:VV=36865:FORTT=1TO50:GOSUB7000:HM=INT(RND(1)*2+10):VM=INT(RND(1)*8
+32)
9010 POKEVV,VM:POKEHH,HM:FORDD=1TO25:NEXT:NEXT:POKEHH,12:POKEVV,38:RETURN

READY.
```

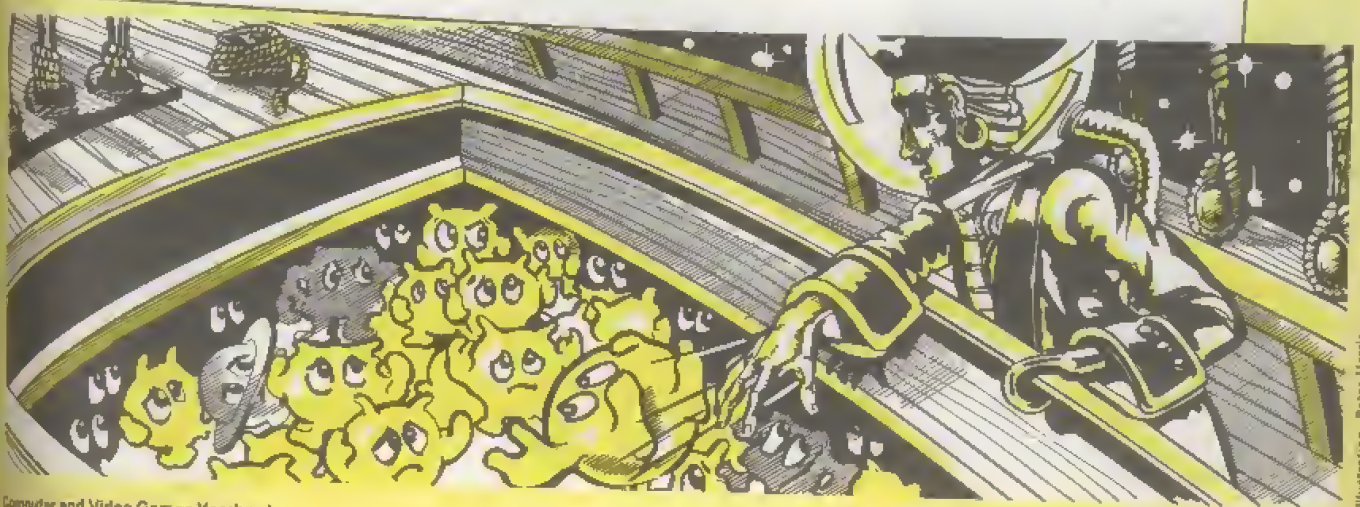
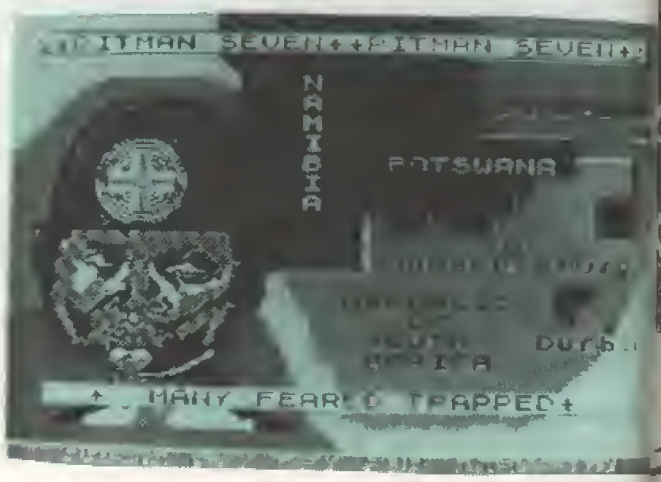


Illustration Peter Harris

# CREATING GAMES

## The inner workings of a software house




**Software houses have had to learn their trade fast.**

**Two years ago, games programming companies as successful as Bug-Byte, Psion, Quicksilva and Imagine were unthinkable. Now games software is big business and new software houses are appearing all the time. We asked one of these, Visions, to tell us about their operation, so if you send away a tape for consideration, you'll understand just what processes it has to go through before it finds its way into the local W.H. Smiths.**

**Visions was set up in West London last summer by four people with a background in different areas of the software industry: Sean de-'Bray was previously involved in commercial software consultancy; Roz Evitts comes from a public relations company which specialised in computer clients; John Burnham is the production director with a background in the audio industry and Martin Parmiter is the financial director.**

**They pooled their talents to become Visions and start producing games for the home market.**

Any software house is ultimately only as good as its programs so Visions treat theirs with special care.

The company aims to have six programmers employed when it gets into full swing, but like many other games companies, a lot of the ideas are sent in by freelance writers.

These are tested and evaluated quickly. The accompanying information is read and the game cassette loaded on the required machine. Some games have an initial impact and the testers take to them straight away, others only become compulsive when they have been played with for a while.

Any that show promise are looked at by other members of the Visions' staff — four people usually test each game and give their comments, and they're all keen games players.

As soon as it gets the go-ahead, the team start working on whether the game needs tidying up or if there are a few areas which need improvement. The programmer is contacted straight away and invited down for a chat — young programmers are asked to bring a parent. The schedule of the game is already being drawn up, with thought going into a possible release date, when adverts would need to be put into magazines and what sort of artwork will be used in presenting the cassette.

On meeting the programmer, the suggested improvements are talked over and Visions try to discover if he is capable of doing these himself or whether he will need help from the programmers on staff. Does he need any additional equipment to make the improvements, are there any books which might help.

At the end of the meeting, he is offered a contract. The company pays 25% royalties but will also pay an advance if extra work is involved.

Visions' designer asks an artist in to look at the game and work on some ideas for the cassette inlay.

Presentation of the cassette is an important factor in how it sells so a great deal of thought goes into the name of the game, the images which appear on the cassette packaging and how it will be represented in advertisements.

If the formula is right, the company can end up with a top-selling cassette, finding its way into [illegible] 15,000 homes.

### HOW

Visions put great stress on the way a freelance programmer presents his games cassette.

The more information they have, the quicker Visions' testing and production team can go into action.

Professional presentation can tell long before the games tester ever loads the cassette. One obvious requirement is to make sure you include your name and address and a phone number if you have one.

Explain what machine your game works for, whether it needs memory expansion, joysticks or any special cartridge to run.

Give its title, a brief write up on what kind of game it is and a run-down on the key controls. Full instructions should be included.

Is it written in Basic or Machine Code and what other machines might it be possible to transfer the game to?

Have you sent the game anywhere else and if so, is it on offer?

Before the tape goes in the post, check that it loads, try it on more than one tape machine. Now it's time to include some personal details. Give your age if you're still at school, add a biography of your computer experience and (if you think it will help) where the idea for the game came from.

Your prize game may still not find its way into the shops but now you have at least given it every chance.

MAL FUNCTION
T. HITCH
SNAG JNR
SCREAMING FOUL UP
THE BOYS
ZAP!
SEVEN HOURS OF COSMIC BLASTERIANS, I DON'T THINK HE'S EVER GOING TO GIVE UP!
KPOW!
EEK!
I DON'T THINK THOSE BOYS CAN TAKE MUCH MORE. GO AND GET FOUL-UP SNAG, WE'LL PUT A STOP TO THIS
LATER
RUMBLE!
YOU RELEASED SCREAMING FOUL-UP, WHATEVER POSSESSED YOU?
HMM! THAT'S THE FASTEST HE'S EVER STOPPED A GAME.
LAST TIME THAT SCREAMING FOUL-UP GOT OUT IT TOOK.. HOLD ON..!
..THE MICRO'S STILL WORKING!
WHAT HAPPENED?
COME QUICKLY, IT'S FOUL UP HE'S ERR.. HE'S ERR!
URGLE!!
GOSH! HE LOOKS BAD. IS IT YOUR THROAT FOUL-UP? DID YOU SCREAM TOO LOUD? COME ON OPEN UP.
MOAN!
BLACK!
OUR PROGRAMMER MAKES A DISCOVERY!
BOY! THAT'S WHAT I CALL A TOUGH GAME FEATURE!

# Presentation on the

## Simon Hunt talks colour and sound

The tips on Atari presentation come courtesy of English Software.

Simon Hunt is the programmer giving you the benefit of his knowledge of the Atari machine. He is responsible for the jewel in English Software's collection, Diamonds.

Diamonds is written in purely machine code, but Simon has reproduced the title sequence in Basic and uses it to illustrate a number of techniques which you can adapt to your own programs.

Variables used in the listing

REGBKGD, REGDIAM, REGBKG2, REGNAME, REGTEXT: These define the addresses of the colour registers corresponding to the colour of the background, diamonds, author's name, and the other text.

COLBKGD, COLDIAM, COLNAME, COLTEXT: define the actual colour value.

LABEL is used to read some of the Data: I have appended labels to the ends of data statements to show what the data is.

RAMTOP defines the register which points to the top of usable memory.

CHBAS defines the register which points to the beginning of the character set table.

SETP points to the area of memory 1K below Ramtop: this is where my new character set will be placed.

SETMEM is the actual value of the first memory location in the new character set table.

CHAR controls the input of the 44 re-defined characters.

BYTE controls the input of the eight bytes which define each character.

DATA is used to read in the data values.

I is just a general variable.

DLIST defines the memory location at the start of the display list.

DLISTP, DLISTP+1 define the registers which tell the Atari where to find the display list.

DELAY is used to control the speed at which the colours change.

Figure 1: Bit values of a byte

128 64 32 16 8 4 2 1

Figure 2: Character set table

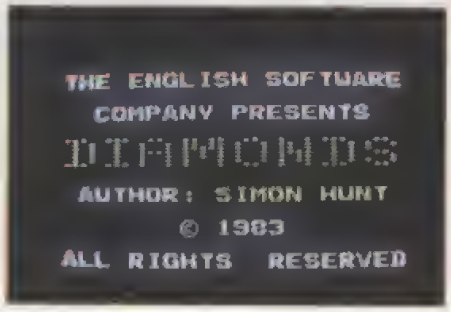
| | |
|---|---|
| Character 0 | |
| Byte 0 | Setmem |
| Byte 1 | Setmem +1 |
| Byte 2 | Setmem +2 |
| Byte 3 | Setmem +3 |
| Byte 4 | Setmem +4 |
| Byte 5 | Setmem +5 |
| Byte 6 | Setmem +6 |
| Byte 7 | Setmem +7 |
| Character 1 | |
| Byte 0 | |
| Byte 1 | |
| Byte 2 | |

*NB The 64 is the part of the instruction which says the following two bytes define the start address of the display data. The 7 is the mode value. If the first line was a mode 0 line, this data value would be 2+64 (66).

Figure 3: Structure of the display

| Graphics Mode | Data value | Scan Lines |
|---|---|---|
| 2 | 7+64* | 16 |
| – | 112 | 8 |
| 2 | 7 | 16 |
| – | 112 | |
| | 112 | 16 |
| 1 | 6 | 8 |
| 1 | 6 | 8 |
| 1 | 6 | 8 |
| 1 | 6 | 8 |
| – | 112 | |
| | 112 | 16 |
| 2 | 7 | 16 |
| – | 112 | |
| | 112 | 16 |
| 2 | 7 | 16 |
| – | 112 | 8 |
| 2 | 7 | 16 |
| – | 112 | 8 |
| 0 | 2 | 8 |
| | Total | 192 |

The success or failure of any programme usually depends upon its "POP". This stands for Presentation, Originality and Playability and I believe Presentation is the most important consideration of the three. In this listing below I'll start by showing how the colours are set up between lines 600 and 720.




Register 708 is colour register 0; register 712 is Colour register 4. The values of any combination of hue and luminance can be calculated by multiplying the hue value by 16 and adding the luminance level. This value is them poked directly into the colour register. So SETCOLOUR 1,4,8, can be replaced by Poke 709, 4*16+8 or Poke 709,72.

Note that in Graphics mode 0 colour register 2 (location 710) defines the colour of the background, but in graphics modes 1 and 2, colour register 4 (location 712) defines the background colour.

Since the title page uses modes 0, 1 and 2 all at once, registers 2 and 4 have been set to the same colour to keep the background uniform; registers 0, 1 and 3 define the colours of the Text.

Lines 1000 to 1100 load in the character set.

The Atari's default character set is stored in 1K of ROM starting at location 57344. The register CHBAS (756) points to the first page of the character set data, (a 'page' is used to describe 256 bytes of memory). At power-up PEEK (756) will return the value 224 since 224*256=57344. If we POKE CHBAS with a different page number (in multiples of four) the Atari will use the data in the following 1K of memory to display the characters.

Now each character is displayed as an 8 x 8 grid. Each row of pixels is defined by one byte of data and where the bits are set to 1 in the byte, the corresponding pixel in the character will be lit.

So each character is defined by eight bytes. The first byte is the top row, the last byte is the bottom row. The bit values are shown in fig 1 – to calculate the value of the byte add the bit values together. (A row with the end bits lit has the value 128+1=129). These bytes are arranged in the character set table as shown in figure 2.

Programme lines 1060 to 1090 load the character set data into RAM 1K below Ramtop while line 1100 activates the new character set.

Lines 2000 to 2040 load the title page data.

The area of RAM used to store the data telling the Atari which characters to display on the screen, is location 1536 to 1755. This is part of page six (page six runs from 1536 to 1791). The rest of page six will be used to store the display list.

Page six is an area of RAM which is not used by Basic or the operating system and so is free to be used by the programmer.

The display list is set up between 3000 and 3090.

It is a list of instructions which tell the Atari the types of graphics mode lines to use for a screen, and where the screen data may be found in memory.

When you execute a GRAPHICS command in Basic, an area at the top of RAM is cleared and used to store the screen data, and a display list is generated just below this area to define which mode lines to use in displaying the data. GRAPHICS 0 produces a display list that defines 24 mode, 0 lines. GRAPHICS 1 produces a display list which defines 20 mode 1 lines than 4 modes 0 lines for the text window.

By choosing the right instructions we can write our own display list to create whatever pattern of mode lines we require, remembering that the size of the screen must never exceed 24 mode 0 lines of 12 mode 2 lines, or the equivalent.

A 'SCAN' line is the name given to a line 1 pixel high. So a mode 0 line is eight scan lines high; a mode 2 line is 16 scan lines high. Thus the maximum number of scan lines in a display is 24*8=192. My Display list is structured as shown in figure 3.

# ATARI

```
29010 REM ==========================
29020 REM
29900 REM --- TEXT DATA ---
29905 REM
29910 DATA 31,22,19,0,19,26,21,24,23,30,
5,0,30,27,20,31,34,16,29,19
29915 DATA 0,0,17,27,25,28,16,26,35,0,28
,29,19,30,19,26,31,30,0,0
29920 DATA 203,201,194,199,200,195,196,2
7,202,197,198,201,202,196,197,203,201,2
9,195,196
29930 DATA 202,202,0,197,202,204,197,199
,199,197,197,202,202,205,197,202,202,194
,204,0
29940 DATA 202,202,0,197,202,0,197,197,1
95,197,197,202,202,202,197,202,202,200,0
,97
29950 DATA 195,193,194,195,194,0,193,193
,193,194,193,194,0,193,195,193,0,195,0
29960 DATA 0,16,32,31,22,27,29,36,0,94,8
,93,91,90,0,86,96,90,95,0
29970 DATA 0,0,0,0,0,0,0,0,37,0,38,39,40,4
1,0,0,0,0,0,0,0
29980 DATA 16,24,24,0,29,23,21,22,31,30,
0,29,19,30,19,29,33,19,18
29990 DATA 0,0,16,30,0,30,19,19,26,0,23,
0,0,43,17,27,25,28,32
30000 DATA 31,19,29,0,42,0,33,23,18,19,2
,0,21,16,25,19,30,43,0,0
30010 REM
30020 REM --- CHARACTER SET DATA ---
30010 REM
30020 DATA 0,0,0,0,0,0,0,0,X
30022 DATA 32,112,32,0,0,0,0,0,X
30024 DATA 2,7,2,0,0,0,0,0,X
30026 DATA 34,119,34,0,0,0,0,0,X
30028 DATA 0,0,0,0,32,112,32,0,X
30030 DATA 32,112,32,0,32,112,32,0,X
30032 DATA 2,7,2,0,32,112,32,0,X
30034 DATA 34,119,34,0,32,112,32,0,X
30035 REM
30036 DATA 0,0,0,0,2,7,2,0,X
30038 DATA 32,112,32,0,2,7,2,0,X
30040 DATA 2,7,2,0,2,7,2,0,X
30042 DATA 34,119,34,0,2,7,2,0,X
30044 DATA 0,0,0,0,34,119,34,0,X
30046 DATA 32,112,32,0,34,119,34,0,X
30048 DATA 2,7,2,0,34,119,34,0,X
30050 DATA 34,119,34,0,34,119,34,0,X
30051 REM
30052 DATA 56,40,108,108,68,254,198,0,
30054 DATA 124,238,192,192,192,238,124,0
30056 DATA 252,110,102,102,102,110,252,0
30058 DATA 254,224,192,252,192,224,254,0
30060 DATA 254,224,192,252,192,192,192,0
30062 DATA 124,238,192,206,198,238,126,0
30064 DATA 198,198,198,254,238,198,198,0
30066 DATA 60,24,24,24,24,24,60,0,
30068 DATA 192,192,192,192,192,224,254,0
30070 DATA 198,238,254,214,214,198,198,0
,M
30072 DATA 230,230,246,214,222,206,206,0
,N
30074 DATA 124,238,198,198,198,238,124,0
,O
30076 DATA 252,238,198,252,192,192,192,0
,P
30078 DATA 252,238,198,252,248,220,206,0
,R
30080 DATA 124,238,192,124,6,238,124,0,
,S
30082 DATA 126,60,24,24,24,24,24,0,
,T
30084 DATA 198,198,198,198,198,238,124,0
,U
30086 DATA 130,198,68,108,108,40,56,0,
,V
30088 DATA 198,198,198,214,214,254,108,0
,W
30090 DATA 102,102,102,60,24,24,24,0,
,Y
30092 DATA 0,0,24,24,0,24,24,0,
,:
30094 DATA 60,66,153,161,161,153,66,60,
,Q
30096 DATA 24,56,24,24,24,24,60,0,
,1
30098 DATA 124,238,198,126,6,238,124,0,
,2
30100 DATA 124,238,198,124,198,238,124,0
,3
30102 DATA 124,238,6,28,6,238,124,0,
,5
30104 DATA 56,108,56,112,222,204,118,0,
,6
30106 DATA 102,102,102,0,0,0,0,0,
10 REM ********************
20 REM *** DIAMONDS TITLE DISPLAY ***
30 REM ***   ADAPTED TO BASIC BY  ***
40 REM ***       SIMON HUNT       ***
50 REM ********************
60 REM
70 GRAPHICS 18:REM BLANK OUT SCREEN
500 REM
510 REM ..........................
520 REM
600 REM ---  SET UP COLOURS  ---
610 REM
620 REGBKGD=712:COLBKGD=224
630 REGDIAM=711:COLDIAM=30
640 REGBKG2=710
650 REGNAME=709:COLNAME=218
660 REGTEXT=708:COLTEXT=22
670 REM
680 POKE REGBKGD,COLBKGD
690 POKE REGBKG2,COLBKGD
700 POKE REGNAME,COLNAME
710 POKE REGDIAM,COLDIAM
720 POKE REGTEXT,COLTEXT
970 REM
980 REM ..........................
990 REM
1000 REM --- LOAD CHARACTER SET ---
1010 REM
1020 DIM LABEL$(24):RESTORE 30020
1030 RAMTOP=106:CHBAS=756
1040 SETP=PEEK(RAMTOP)-4
1050 SETMEM=SETP*256
1060 FOR CHAR=0 TO 43:FOR BYTE=0 TO 7
1070 READ DATA
1080 POKE SETMEM+CHAR*8+BYTE,DATA
1090 NEXT BYTE:READ LABEL$:NEXT CHAR
1100 POKE CHBAS,SETP
1970 REM
1980 REM ..........................
1990 REM
2000 REM --- LOAD DATA INTO PAGE 6 ---
2010 REM
2020 RESTORE 29010
2030 FOR I=0 TO 219:READ DATA
3040 POKE 1536+I,DATA:NEXT I
3050 REM
3070 REM ..........................
3080 REM
3000 REM --- SET UP DISPLAY LIST ---
3010 REM
3020 DLISTP=560:DLIST=1536+220
3030 REM
3040 RESTORE 3200:I=0
3050 READ LABEL$:IF LABEL$(1,1)<>"-" THE
N POKE DLIST+I,VAL(LABEL$):I=I+1
3060 IF LABEL$<>"-END" THEN 3050
3070 REM
3090 POKE DLISTP,220:POKE DLISTP+1,6
3100 REM
3110 REM -- DISPLAY LIST DATA --
3120 REM
3200 DATA 112,112,112,-SKIP 24 SCAN LNS
3210 DATA 71,0,6,-LMS MODE 2
3220 DATA 112,-SKIP 8 SCAN LINES
3230 DATA 7,-MODE 2 LINE
3240 DATA 112,112,-SKIP 16 SCAN LINES
3250 DATA 6,6,6,6,-4 MODE 1 LINES
3260 DATA 112,112,-SKIP 16 SCAN LINES
3270 DATA 7,-MODE 2 LINE
3280 DATA 112,112,-SKIP 16 SCAN LINES
3290 DATA 7,-MODE 2 LINE
3300 DATA 112,-SKIP 8 SCAN LINES
3310 DATA 7,-MODE 2 LINE
3320 DATA 112,-SKIP 8 SCAN LINES
3330 DATA 2,-MODE 0 LINE
3340 DATA 65,220,6,-JUMP START OF DLIST
3350 DATA -END
3500 REM
3510 REM ..........................
3520 REM
4000 REM --- CYCLE THE COLOURS ---
4010 REM
4020 FOR I=1 TO 30
4300 COLDIAM=COLDIAM+16
4310 IF COLDIAM>256 THEN COLDIAM=COLDIAM
-240
4320 POKE REGDIAM,COLDIAM
4330 FOR DELAY=1 TO 4:NEXT DELAY
4340 NEXT I
4350 COLTEXT=COLTEXT+16
4360 IF COLTEXT>256 THEN COLTEXT=COLTEXT
-240
4370 POKE REGTEXT,COLTEXT
4380 GOTO 4020
30000 REM
```

Lines 3040 to 3060 load the display list data into page six and line 3090 tells the Atari to start using this list.

Any address in the Atari's memory is defined by two bytes — the first is known as the least significant byte (LSB) and the second the most significant byte (MSB). The address is calculated by multiplying the MSB by 256 and adding the LSB.

The first three bytes of the display list cause 24 scan lines to be skipped: this defines the top border of the display. The next byte says to use a mode 2 line and that the next two bytes give the start address of the screen data. These bytes point to location 1536: 0 (LSB) +6 (MSB)*256. So the first 20 bytes of page six are displayed in mode 2 at the top of the screen.

The next byte says skip eight scan lines — this leaves a gap between the mode 2 lines. The next byte says use a mode 2 line, so the second 20 bytes of page six are displayed on this line.

The last three bytes of the display list tell the Atari to jump to the beginning of the display list again. The first of these bytes is the jump command; the other two bytes give the start address of the Display List.

Lines 4000 to 4380 of the listing alter the colours of the text, and gives a sparkling effect to the Diamonds. The hue is changed by the luminance level is kept the same; this is achieved by adding 16 to the previous colour value lines 4310 and 4360 make sure the value to be POKED is within the range 0-255.

# THE VESPOZIAN AFFAIR

An adventure set on a spacecraft soaring between star systems

By Keith Campbell

**RUNS ON A DRAGON IN 32K.**

```
1 CLS:PRINT PRINT PRINT"        THE VESPOZIAN AFFAIR" PRINT PRINT:PRINT"     A COMP
UTER & VIDEO GAMES" PRINT"              ADVENTURE BY":PRINT" KEITH CAMPBELL AND TERR
Y PRATT":FORI=0TO3000:NEXT
2 CLS:PRINT"YOU PLAY THE RULE OF D'TAAN,     SCIENTIFIC OFFICER ABOARD THE    SPAC
ESHIP VESPOZIAN."
3 PRINT"YOUR (PRIVATE) MISSION IS TO     OBLITERATE THE BLOODLINE         STARGATE
.  ALL THE INFORMATION  YOU NEED TO DO THIS IS AVAILABLEWITHIN THE GAME!"
4  PRINT PRINT" USE 1-WORD OR 2-WORD COMMANDS":PRINT:PRINT"      GOOD LUCK - D'TA
AN" FORI=0TO8000:NEXT
5 CLEAR500
10 DIML$(14),L1$(14),E$(14),D$(14),O$(18),P(18),C(18),NB$(11),Q$(4),V$(8)
20 FORI=0TO14:READL$(I),L1$(I),E$(I),D$(I):NEXT:FORI=0TO18:READO$(I),P(I),C(I):N
EXT:FORI=0TO11:READNB$(I):NEXT
50 PN=1:CT=0:JM=-1:PV=6:CY=140:PF=600:CD=2:AT$="A THOUGHT IS FRAMED IN YOUR MIND
":ST=1:PI=999:SF=1
60 WV$="TAKDROLIFLOOEMAOPEUNLLOOCLOWEAREMINSRAIPREKILSLE"
70 WG$="PORSTAPORAFTUP DOWOUTBUNSHUNORERSWESBULOOOCRAVES"
80 WD$="PSFAUDUBTNEWLRCV"
90 WN$="SHUDEVPOLCRAASBSPACONC'YLTONBE2GRAMAC00500100200300+KEYROCDISPILDOOBUTARO
SCRBUNSHE"
95 Q$(1)="COMPUTER & VIDEO GAMES" Q$(2)="WELCOMES YOU TO":Q$(3)="THE SEVENTH EMP
IRE ADVENTURE"
100 IFPN=5ANDFL=9THENRT=5ELSEIFPN>5THENRT=0
101 IFP(7)=9OR(P(6)=9ANDC(6)>2)THENSF=0
102 IFPV=3ANDP(2)=99THENP(2)=4
103 IFPN=2ANDC(0)=-4ANDC(4)<>5THENGOSUB35300:GOTO60050
104 CT=CT+1:IFC(6)=3ANDP(6)=9THENC(6)=4:PF=PF+2000:Q$(3)="NEW FUEL LOADED":Q$(6)
="METAL CONTAINER"
105 IFST=1THENJE=JE+1:IFJE>24THENJE=JE-25:PV=PV+JM:CLS:IFPV=CD THENST=2:PF=PF-10
0:PRINT"VESPOZIAN IN ",NB$(PV)," ORBIT":PLAY"L404V31AP75AP75L3A#":ELSEPRINT"VESPO
ZIAN PASSING ",NB$(PV):PLAY"L404V31AP75AP75L3A#"
106 IFRT=5THENP(9)=99:P(10)=6ELSEIFPN=5ANDRT=0THENP(9)=5:P(10)=5
107 IFCT>200THENCT=1:CY=CY+1
108 IFCD=PV THENST=2
109 IFST=2THENOD$="ORBITING":ELSEOD$="BEARING ON"
110 IFPN=9ANDC(4)<>4THENGOSUB35300:GOTO60010
120 IFPV=2ANDPN=4ANDP(12)=99THENP(12)=4
125 IFP(2)=13THENP(2)=88:PI=CY:Q$(3)="POLYPS VANISH INTO THE ROCKS"
126 IFCY>PI+19 THENP(18)=13:PI=CY
129 IFP(1)=PN AND(PN=8ORPN=13)AND(P(18)<>13ORP(6)<>13)THENQ$(3)="SWITCH STARTS M
OTOR. DRILL":Q$(4)="ENGAGES AND SPRAYS DUST!"
130 IFP(18)=13ANDP(1)=13ANDP(6)=13ANDC(6)=2THENP(18)=88:Q$(6)="FUEL CONTAINER":C
(6)=3:Q$(3)="SWITCH STARTS MOTOR. DRILL":Q$(4)="ENGAGES AND FILLS CONTAINER"
135 IFP(17)=55THENC(3)=3
140 IFC(4)<>3AND(PN=10ORPN=6ORPN=7ORPN=10)THENIG=IG+1ELSEIG=0
145 IFIG>0THENP(10)=PN IFIG=7THENGOSUB35300:GOTO60070
146 IFP(10)=PN THENIFRND(6)=3THENQ$(1)="EVER GET THE FEELING . . ?"
150 IFP(4)<>PN ANDP(4)<>88ANDP(4)<>55ANDP(4)<>11ANDP(4)<>66THENP(4)=88:Q$(1)="ST
```

The Seventh Empire is dominated by the Bloodline race, a tyrannical regime headed by hereditary clones. They alone control the 'greenhouse effect' planets, those rich in stellar energy — energy especially useful for interstellar travel. And interstellar travel means power.

Bloodline Scientists have developed a theory that "greenhouse effect" planets are created by "Polyps" — small organisms that are the nomads of space. The theory holds that if a new generation of Polyps form on a dead planet, their activity turns it over a period of time, into a greenhouse effect planet. The time scale for this process is estimated at 20 years.

The Bloodline Empire have therefore chartered a space exploration vessel, The Vespozian, skippered by Captain Bezel from the Pirate Empire, to investigate the Funus solar system to test their theories.

On board The Vespozian is D'taan, a female human scientist, charged with the responsibility of conducting this investigation. D'taan is ambitious, and would risk a lot to gain control of a source of stellar energy.

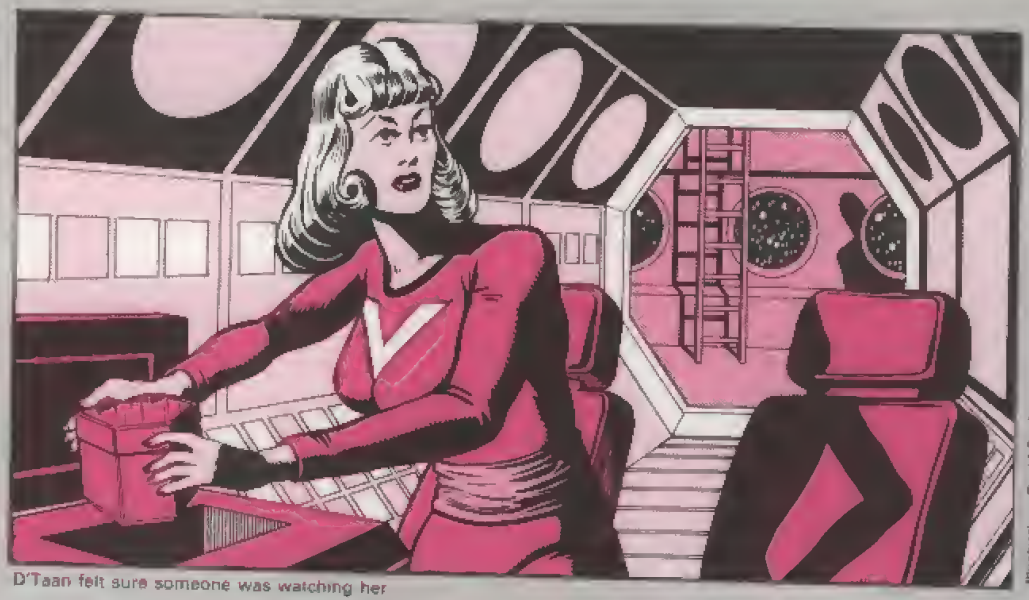
However, to do this, she would need to break free from the influence of the Bloodline Empire, by obliterating the Bloodline Stargate currently stationed in the Funus System, and to which the Vespozian is now returning at the end of its voyage.

Nearing the end of its journey, Vespozian is low on fuel. Each change of course uses 100 picaroth of fuel, and Vespozian's only weapon, a laser cannon, uses a massive 1000 Picaroth each time it is fired.

D'taan is uneasy. She is convinced that there is a Bloodline spy aboard.

In "The Vespozian Affair", you become the cautious D'taan.

To play this Adventure, enter 1-word or 2-word commands when prompted by "WHAT NOW?". Bear in mind that to move to a different location you must always use the verb "GO" followed by a direction or location. And be careful — I think you're being followed . . .



D'Taan felt sure someone was watching her

Illustration David Pugh

# SEVENTH EMPIRE ADVENTURE NOTES

## Scenario

Aboard the Vespozian heading through the Funus system to go into orbit around Gyrates, and there to dock with the Bloodline Stargate, also in orbit aound Gyrates. As the game starts, the Vespozian is between the orbits of Great Bulgen and Bulgen.

## Mission

To obliterate the Stargate using the Vespozian's laser weapon. As D'taan, you must do this covertly, avoiding suspicion by the Bloodline spy Grakta, and without the knowledge or help from Captain Bezel.

## 3. Game Description

This follows the usual Adventure format, but breaks out this mode for control of the ship, and view of the navigational details.

## 3.1 Navigational Details

These are reported on a screen in the Navigation Room. The screen is not visible from "Adventure" mode, but a "LOOK AROUND" clue mentions the screen. "LOOK SCREEN" will display it. Details given are:—

CLONE-YEAR ZONETIME
CURRENT BEARING OR ORBIT OF VESPOZIAN
ETA AT BEARING (IN ZONETIME)
FUEL LEVEL (IN PICAROTH)
LASER OPEARTIVE OR INOPERATIVE

● Note that 1 clone-year = 200 Zonetime. 1 Zonetimes = 1 player's command.

At start, the fuel level is 600 picaroth. Picaroth is the energy unit, and usable as follows:—

To change ship's course — 100pR
To freeze crew cryogenically — 10pR/Clone-year
To fire laser — 1000pR

## 3.2 Control of Vespozian

Normally from Bridge, where LOOK AROUND clue says "Button marked Thought Control". Pressing button is impossible, as player is restrained by Machen, the pilot.

A metal lined gangway near the door of the suit room, reveals via "LOOK AROUND" a hidden bulkhead which can then be entered. It contains a duplicate control. No button is visible, so the player must deduce there is a button from his look at the Bridge. Pressing the button puts the game in "control mode" eg:

A THOUGHT IS FRAMED IN YOUR MIND
HEADING, CRYOGEN, LASER or END?

To change the ship's direction, a touch of the "H" key will cause the current location and heading to be displayed, and a request for new destination.

The reply is validated against known planets and stars, and against the current fuel level. If OK, the course correction is applied and confirmed, and the fuel decreased by 100pR.

As the ship passes each planet, between moves, the screen is cleared and:

"VESPOZIAN PASSING say ROTH"

```
RANGE FEELING . ."ELSEIFP(5 )>PN ANDP(5)<>55ANDP(5)<>88ANDP(5)<>11ANDP(5)<>66THE
NP(5)=88 0$(1)="ODD - I THOUGHT . ."
160 IFC(3)=2ANDP(17) <> 55ANDP(17) <> 99THENP(17)=88.W$(1)="FUNNY - SOMETHING'S
GONE . .":C(17)=3
170 IFP(10)=1ANDPN=1ANDK1=14THENGOSUB35300:GOTO60080
175 IFPN=60RPN=70RPN=100RPN=1THENIFRND(3)=2THENP(10)=PN ELSEP(10)=88
180 IFP(17)=55ANDPN <> 11ANDPN <>10ANDC(17) > 2 THENGOSUB35300:GOTO60100
185 IFC(0)=3ANDPN <> 1ANDPN <> 2THENGOSUB35300:GOTO60110
200 FORI=1TOLEN(E$(PN))
210 IFMID$(E$(PN),I,1)="P"THENEX$=EX$+"PORT."
220 IFMID$(E$(PN),I,1)="S"THENEX$=EX$+"S'BOARD."
230 IFMID$(E$(PN),I,1)="F"THENEX$=EX$+"FOR'D."
240 IFMID$(E$(PN),I,1)="A"THENEX$=EX$+"AFT."
250 IFMID$(E$(PN),I,1)="U"THENEX$=EX$+"UP."
260 IFMID$(E$(PN),I,1)="D"THENEX$=EX$+"DOWN."
270 IFMID$(E$(PN),I,1)="O"THENEX$=EX$+"OUT."
280 NEXT
290 II=0.V$(II)="VISIBLE ":FORI=0TO10:IFP(I)=PN THENOS$=O$(I)ELSENEXT:GOTO330
310 IFLEN(V$(II))+LEN(OS$) < 29THENV$(II)=V$(II)+OS$+". ":OS$=""ELSEII=II+1:GOTO
310
320 NEXT
330 CLS PRINT"I AM ",L$(PN).PRINTL1$(PN) PRINTSTRING$(32,131); IFLEN(EX$) > 0THE
NPRINT"EXITS ",EX$
340 IFLEN(V$(0)) < 9THENPRINTV$(0)
345 FORI=1TO8 IFV$(I) <> ""THENPRINTV$(I)
350 NEXT
360 PRINTSTRING$(32,131), IFA$<>""THENPRINT"----->YOU SAID ",A$
365 PRINT FORI=1TO4 IFO$(I)<>""THENPRINTO$(I)
370 NEXT
380 PRINT.PRINT"----->WHAT NOW".
390 PL=PN.FORI=0TO4 V$(I)="" O$(1)="" NEXT A1$="" A2$="".A3$="":A4$="":EX$="" I
PUTA$
400 IFLEN(A$) < 3THEN40000ELSEA2$=LEF1$(A$,3)
405 IFA2$="INV"THEN4000ELSEIFA2$="WAI"THEN5000ELSEIFO2$="QUI"THEN61500ELSEIFA2$=
"HEL"THEN6000ELSEIFA2$="SLE"THEN18000
410 J=0.FORI=1TOLEN(A$).IFMID$(A$,I,1)=" " THENJ=I
420 NEXT.IFJ=0THEN40110ELSEA1$=LEFT$(A$,J-1).A3$=RIGHT$(A$,LEN(A$)-J).A4$=LEFT$
A3$,3)
430 IFA1$="GO"ORA2$="GET"THEN1000
440 X$=WV$ Y$=A2$ GOSUB35000 IFJ=0THENO$(2)="I DON'T KNOW HOW TO "+A1$ GOTO100E
SEK1=(J-1)/3+1
450 X$=WN$.Y$=A4$.GOSUB35000
460 IFJ=0THENO$(2)="WHAT IS A "+A3$+"?" GOTO100
470 K2=(J-1)/3
490 ONK1 GOTO2000,3000,7000,8000,8000,9000,10000,11000,12000,13000,14000,15000
000,16000,17000
1000 X$=WG$ Y$=A4$ GOSUB35000 IFI=0THEN40010ELSEX$=E$(PN).Y$=MID$(WD$,(J-1)*3+1
1).GOSUB35000 IFJ=0THEN40010ELSEPN=VAL(MID$(D$(PN),(J-1)*2+1,2)) GOTO40020
2000 IFK2=19THEN40030ELSEIFK2 < 18THEN40070ELSEIFP(K2)=55THEN40040ELSEIFP(K2)
N THEN40050ELSEIFC(K2)=-2THEN40000ELSEIFC(K2)=-1THEN40060ELSEIFP(9)=PN THEN401
2010 IF(K2=7OR(K2=6ANDC(6)=3)ANDP(8) <> 55THENO$(2)="TOO HOT TO HANDLE".GOTO1
ELSEIFIN . 3THENO$(2)="I AM OVERLOADED ALREADY!" GOTO100ELSEIN=IN+1 P(K2)=55 G
040020
3000 IFK2 18THEN40070ELSEIFP(K2) 55THEN40070ELSEIFK2=1AND(PN <> 8ANDPN
3)THENGOSUB35300 GOTO60060ELSEIN=IN-1 IFPN=14THENP(K2)=66 O$(3)="SLIPPED IT UN
R PILLOW"ELSEP(K2)=PN
3010 GOTO40020
4000 O$(1)="I AM CARRYING " IFIN=0THENO$(2)="NOTHING" GOTO100ELSEJ=1 FORI=0TO
4010 IFP(I)=55THENIFLEN(O$(J))+LEN(O$(I)) 29THENJ=J+1 IFJ=5THENI=18:NEXT GOTO
ELSEGOTO4010ELSEO$(J)=O$(J)+O$(I)+". "
4020 NEXT.GOTO100
5000 CT=CT+15 IFST=1THENJE=JE+15
5010 GOTO40020
6000 O$(2)="ALWAYS LOOK AROUND HND" O$(3)="EXAMINE THINGS. TRY WORDS" O$(4)="
E INSERT, LIFT, WAIT . ." GOTO100
```

```
7000 IFK2<>20ORPN<>14THEN40000ELSEQ$(2)="NOTHING !" FORI=0TO18 IFP(I)=66THENP(I)=
14 Q$(2)="IT WAS STILL THERE!"
8010 NEXT:GOTO100
8000 IFK2<>23THEN8010ELSEIFPN=7THENQ$(2)="I SEE BUTTON MARKED".Q$(3)="-THINK CON
TROL-":GOTO100ELSEIFPN=10ANDLEN(E$(10))=2THENE$(10)=E$(10)+"L".Q$(2)="WOW!" L1$(
10)=L1$(10)+" AND HIDDEN BULKHEAD":GOTO100
8005 IFPN=9ANDE$(9)="S"THENE$(9)="SC":P(3)=9 Q$(2)="AHA!":GOTO100ELSEIFPN=6THENQ
$(2)="COURSE DATA ON SCREEN" GOTO100
8007 IFPN=2THENIFC(0)=-3THENQ$(3)="INNER DOOR OPEN" Q$(4)="OUTER DOOR CLOSED":GO
TO40020ELSEIFC(0)=-4THENQ$(3)="INNER DOOR CLOSED":Q$(4)="OUTER DOOR OPEN":GOTO40
020
8010 IFK2=19THEN40030ELSEIFK2=1THENIFP(1)<>55ANDP(1)<>PN THEN40030ELSEV$(2)="IT
HAS HOLLOW CYLINDRICAL CUTTER":Q$(3)="AND PRESSURE-SENSITIVE SWITCH" GOTO100
8015 IF(PN=20RPN=1)ANDK2=22THENQ$(2)="SIGN -AIRLOCK CONTROL-" GOTO100
8020 IFK2<17ANDK2>11THENIFP(K2)<>55THEN40070ELSEON K2-11GOTO8700,8710,8720,8730,
8740
8025 IFK2=20ANDPN=14THENQ$(3)="LOOKS STRANGELY LUMPY . ." GOTO40020
8026 IFK2=24ANDPN=6THEN45000
8030 Q$(3)="NOTHING SPECIAL":GOTO40020
```

"You haven't seen the Bloodline disc have you?" grated Grakla

```
8700 Q$(2)="LABEL -YUSES-":GOTO100
8710 Q$(2)="LABEL -POLYPS-":GOTO100
8720 Q$(2)="LABEL -FUNUS-":GOTO100
8730 Q$(2)="LABEL -CONFIDENTIAL-":GOTO100
8740 Q$(2)="LABEL -BLOODLINE-":GOTO100
9000 IFK2<>21THEN40000ELSEIFPN<>10THEN40050ELSEIFC(17)=2THENQ$(2)="LOCKED!" GOTO
100ELSEIFC(17)=4THENQ$(2)="ALREADY OPEN!":GOTO100ELSEIFP(7)=10THEN60000
9010 C(17)=4:E$(10)=E$(10)+"R" GOTO40020
9000 IFK2<>21THEN40000ELSEIFPN<>10THEN40050ELSEIFC(17)>2THEN40090ELSEIFP(17)<>5
5THEN40060ELSEC(17)=3:GOTO40020
9000 IFK2<>21THEN40000ELSEIFPN<>10THEN40050ELSEIFC(17)<>4ORP(17)<>55THEN40060EL
SEC(17)=2:GOTO40020
9000 IFK2<>21THEN40000ELSEIFPN<>10THEN40050ELSEIFC(17)<>4THEN40060ELSEC(3)=3 E$
(10)=LEFT$(E$(10),3):GOTO40020
9000 IFK2<>4ANDK2<>5THEN40000ELSEIFP(K2)<>55THEN40070ELSEIFC(4)=K2 THENQ$(2)="W
HAT'S THIS I'M WEARING THEN?":GOTO100ELSEIFC(4)>2THENQ$(2)="WEARING "+LEFT$(O$(C
(4)),LEN(O$(C(4)))-7):GOTO100ELSEC(4)=K2:O$(K2)=O$(K2)+" (WORN)":GOTO40020
9000 IF(K2<>4ANDK2<>5)ORC(4)=2THEN40080ELSEC(4)=2:O$(K2)=LEFT$(O$(K2),LEN(O$(K2
)-7):GOTO40020
9000 IFK2=19THEN40030ELSEIFK2<12ORK2>16THEN40000ELSEIFP(K2)<>55THEN40070ELSEIFP
(K2)<>6THENQ$(2)="NO COMPUTER TO TAKE IT":GOTO100
9005 IFP(10)=6ANDK2>11ANDK2<17THENGOSUB35300:GOTO60090
9010 CLS3:PRINTO$(K2);" SPINS IN IT'S DRIVE . .":PLAY"L101A":PLAY"05L100F#":CLS
ON K2-11GOTO15050,15100,15200,15250,15400
9050 PPRINT"-YUSES SYSTEM-":PRINT"STAR SYSTEM ADJACENT":PRINT"TO FUNUS. HAS 3 PL
ANETS " PRINTNB$(11),"      - BALL OF FIRE":PRINTNB$(9)," - INHABITED BY MINING"
PRINT"                COLONY, NO FINDS"
9060 PRINTNB$(8);" - REMOTE DEAD PLANET":GOTO15500
9100 PRINT"-POLYPS-":PRINT"FREQUENT GALAXY IN MILLIONS" PRINT"AROUND ENERGY-RIC
H PLANETS." PRINT"REGENERATE EVERY 20 YEARS.":PRINT"ACTIVE POLYPS CAN TURN DEAD"
PRINT"PLANET INTO GREENHOUSE-EFFECT":PRINT"PLANET, RICH IN STELLAR ENERGY"
9110 PRINT"AFTER 20 YEARS . .":GOTO15500
9200 PRINT"-FUNUS SYSTEM-":PRINT"STAR WITH 7 PLANETS.":PRINT"IN ORDER FROM FUNU
S -" PRINTNB$(1);" - (MOLTEN ROCK)":PRINTNB$(2);" - (UNINHABITED)" PRINTNB$(3),"
```

```
 - (GREENHOUSE EFFECT)":PRINTNB$(4);" - (INHABITED)"
15210 PRINTNB$(5):PRINTNB$(6);" - (ICY WASTE)":PRINTNB$(7)," - (LUMP OF ROCK)" G
0TO15500
15250 PRINT"-CAPTAIN'S LOG-":PRINT"BEARING TO DOCK WITH BLOODLINE" PRINT"STARGAT
E IN GYRATES ORBIT.":PRINT"MISSION ACCOMPLISHED - D'TAAN'S":PRINT"EXPERIMENTS CO
NFIRM POLYP":PRINT"THEORY. PITY BLOODLINE WILL":PRINT"BENEFIT!"
15300 PRINT"GLAD TO GET SHOT OF THIS":PRINT"CREW! SUSPECT GRAKIA IS" PRINT"BLOOD
LINE SPY. MACHEN,":PRINT"THE TIAITHEN LIZARD GIVES ME" PRINT"THE CREEPS. CAN'T G
ET RID OF":PRINT"HIM - ONLY PILOT ABOARD!":GOTO15500
15400 PRINT"-BLOODLINE-":PRINT"TYRANNICAL EMPIRE KEEPING":PRINT"CONTROL OF ENERG
Y SUPPLIES":PRINT"FROM GREENHOUSE PLANETS -":PRINT"ON WHICH INTERSTELLAR TRAVEL"
:PRINT"DEPENDS.":PRINT"STARGATE IN FUNUS SYSTEM"
15410 PRINT"CAN SUMMONS CRUISERS TO":PRINT"QUELL REBELS.":GOTO15500
15500 FORJ=0TO7:PLAY"O5L100F#":FORI=0TO1000:NEXT:NEXT:Q$(2)="YOU REMOVE THE DIS
. .":GOTO100
16000 IFK2<>22THEN40020
16010 IFPN=7THENIFP(10)=7THEN60000ELSEQ$(2)="MACHEN, THE LIZARD PILOT":Q$(3)="RE
STRAINS YOU":GOTO100
16020 IFPN<>12THEN16400ELSEIFPF=0THEN60020ELSEGOSUB35100
16030 PRINT"HEADING, CRYOGEN, LASER, OR END"
16040 PLAY"O5L255V31F":Z$=INKEY$:IFZ$="H"THEN16100ELSEIFZ$="C"THEN16200ELSEIFZ$=
"L"THEN16300ELSEIFZ$="E"THEN40020ELSE16040
16100 J=0:GOSUB35100:PRINT"CURRENTLY ";OD$;":  ";NB$(CD):INPUT"NEW DESTINATION";
AA$:FORI=0TO11:IFAA$=NB$(I)THENJ=I
16105 NEXT:IFJ=0THENPRINT:PRINTAA$;" NOT ON DATABASE":FORI=0TO2000:NEXT:GOTO160
0
16110 IFJ=CD THEN16020ELSEIFJ>PV THENJM=1ELSEJM=-1
16120 ST=1:JE=0:CD=J:PF=PF-100:PRINT:PRINT"COURSE CORRECTION APPLIED":PRINT"NEW
BEARING  ";NB$(CD):PRINT"FUEL:          ";PF;" PICAROTH":GOSUB35200:IFPF<1THEN600
ELSE16020
16200 GOSUB35100:PRINT:PRINT"CRYOGENIC CONTROL":PRINT"ENERGY TO FREEZE CREW  10
 PR/CY":PRINT:INPUT"HOW MANY CLONE-YEARS FREEZE",AA$:IFVAL(AA$)*10>PF THENPRINT
PRINT"FUEL DEFICIENCY.":PRINT"ITERLOCK OVERRIDE":PRINT"* OPERATION ABORTED *":GO
UB35200:GOTO160
16210 PF=PF-10*VAL(AA$):CY=CY+VAL(AA$):PRINT"STAND BY":GOSUB35200:GOSUB35300:PN=
14:Q$(2)="YAWN . .":GOTO100
16300 GOSUB35100:PRINT"LASER CONTROL":PRINT
16305 PRINT:INPUT"TARGET ===>";AA$:IFAA$="STARGATE"THEN16320ELSEJ=0:FORI=0TO11:
FNB$(I)=AA$ THENJ=I:I=11:NEXTELSENEXT
16310 IFJ=0THENPRINTAA$," NOT ON DATABASE":GOSUB35200:GOTO16020
16320 PRINT"TARGETED ON ";AA$:PRINT"POWER LOADING . .":FORI=0TO5000:NEXT:IFPF<10
00THENPRINT"FUEL DEFICIENCY"ELSEIFJ=PV OR(AA$="STARGATE"ANDPV=2)THEN16330ELSEPR
INTAA$," OUT OF RANGE"
16325 PRINT"COMPUTER OVERRIDE":PRINT"* OPERATION ABORTED *":GOSUB35200:GOTO1600
16330 GOSUB35300:FORI=0TO10:NEXT:GOSUB35300:FORI=0TO10:NEXT:GOSUB35300:FORI=0TO
0:NEXT:IFAA$<>"STARGATE"THEN60030ELSE60040
16400 IFPN=1THEN16600
16410 IFPN=2THEN16600ELSEIFPN<>3THEN40050
16420 GOSUB35100:INPUT" THINK 'DESTINATION' OR 'END' ";AA$:IFAA$="VESPOZIAN"THE
IFP(0)=2THENPRINT"AT VESPOZIAN":PRINT"* OPERATION ABORTED *":GOSUB35200:GOTO100
LSEPRINT"IN FLIGHT VESPOZIAN":GOSUB35200:PRINT"DOCKING":GOSUB35200:P(0)=2:D$(3)
"2*":GOTO16420
16425 IFLEFT$(AA$,1)="E"THEN40020
16430 J=0:FORI=0TO11:IFAA$=NB$(I)THENJ=I
16440 NEXT:IFJ=0THENPRINTAA$;" NOT ON DATABASE":GOSUB35200:GOTO100
16450 IFJ<>PV THENPRINTAA$;" OUT OF RANGE":GOSUB35200:GOTO100
16550 IFST=1THENPRINT"VESPOZIAN NOT IN ";AA$;" ORBIT":PRINT"* OPERATION BORTED
" GOSUB35200:GOTO100
16560 IFJ<>8THENPRINT"CONDITIONS ON ";AA$:PRINT"NOT SUITABLE FOR SHUTTLE" PRINT
LANDING":PRINT"* OPERATION ABORTED *":GOSUB35200:GOTO100
16565 IFC(0)<>-4THENPRINT"SHUTTLE BAY DOORS CLOSED":GOSUB35200:PRINT"* OPERATIO
 ABORTED *":GOSUB35200:GOTO100
16570 PRINT"HEADING - ";AA$:GOSUB35200:PRINT"LANDING ON ";AA$:P(0)=8:D$(3)="UP
GOSUB35200:GOTO100
16600 IFPN=1THENIFC(0)=-2THENC(0)=-3:L1$(1)="BLUE BUTTON BY OPEN BULKHEAD":E$(
="PFL":GOTO40020ELSEIFC(0)=-3THENC(0)=-2:L1$(1)="BLUE BUTTON BY CLOSED BULKHEA
```

```
E$(1)="PF":GOTO40020
16610 IFPN=2ANDC(0)=-3THENC(0)=-4:E$(2)="UT":D$(2)="4*3*":D$(3)="INNER DOOR CLOS
ES":D$(4)="OUTER DOOR OPENS":GOTO40020
16620 IFPN=2ANDC(0)=-4THENC(0)=-3:E$(2)="TP":D$(2)="3*1*":D$(3)="OUTER DOOR CLOS
ES":D$(4)="INNER DOOR OPENS":GOTO40020
16700 GOTO40050
17000 D$(2)="TOO RISKY!":GOTO100
18000 D$(2)="I'M NOT TIRED!":GOTO100
35000 J=0:FORI=1TOLEN(X$):STEPLEN(Y$):IFY$=MID$(X$,I,LEN(Y$))THENJ=I:I=LEN(X$)
35010 NEXT:RETURN
35100 PLAY"":CLS:PLAY"O5G#L255V30":PRINTAT$:PRINT:RETURN
35200 FORI=0TO4000:NEXT:RETURN
35300 FORI=0TO100:CLS0:PLAY"O5L255HV30":CLS5:PLAY"O1L255A#V30":NEXT:RETURN
40000 D$(2)="IMPOSSIBLE!":GOTO100
40010 D$(2)="I CAN'T GO "+A2$:GOTO100
40020 D$(2)="OK":GOTO100
40030 D$(2)="REFERENCE DISC BY NUMBER":GOTO100
40040 D$(2)="I'M ALREADY ACPRYIG IT!":GOTO100
40050 D$(2)="I DON'T SEE IT HERE":GOTO100
40060 D$(2)="I CAN'T - YET!":GOTO100
40070 D$(2)="I'M NOT CARRYING IT!":GOTO100
40080 D$(2)="YOU MUST BE JOKING!":GOTO100
40090 D$(2)="OK - NOTHING HAPPENS":GOTO100
40100 D$(2)="GARY WINKS TO ME AND":D$(3)="GLANCES AT GRAKTA":GOTO100
40110 D$(2)="HUH?":GOTO100
45000 CLS:PRINT:PRINT"CLONE YEAR ";CY;"    ZONETIME ";CT:PRINT:PRINTSTRING$(32,13
);:PRINT:PRINT"VESPUZIAN ";CD$;" ";TAB(20)ND$(CD)
45002 IFCT=1THENPRINT"ETA ";:CH=INT(CT+ABS(CD-PV)*25-JE)+200:CB=CT+ABS(CD-PV)*
25-JE-(CH+200):PRINTTAB(12)STR$(CA);",";RIGHT$(STR$(CB),LEN(STR$(CB))-1)
45005 PRINT"NEAREST BODY ";TAB(9)NB$(PV):IFPV=2THENPRINTTAB(9)"BLOODLINE STARGAT
E"
45010 PRINT"HULL ";TAB(12)HF;"%":PRINT"AUTH";:PRINT"LASER ";:IFPF>1000THENPRINTND(13
)"INOPERATIVE":ELSEPRINTND(13)"OPERATIVE"
45060 PRINT:PRINTSTRING$(32,131);:PRINT:PRINT"    THINK CONTROL REPORTING":PLAY"O
4L1V1B":PLAY"O1L1V1B":PLAY"O1L1V1B":PLAY"O1L1V1B":GOTO40020
50000 DATA"THE CREW'S QUARTERS,LINED WITH BUNKS,DSB,3#1#14,IN THE RESEARCH LAB, W
ITH BLUE BUTTON BY DOOR,HEMD,PF,0#6#2#,IN THE SHUTTLE BAY,BLUE BUTTON ON W
ALL,P,1#,IN A SHUTTLE WITH -MAIN CONTROL- BUTTON,0,2#,OUTSIDE THE HULL,OF THE V
ESPUZIAN,V,,1
50010 DATA"IN THE CAPTAIN'S CABIN,,0,2#,IN THE NAVIGATION AND,COMPUTER ROOM,MF
UP,1#,A TWIN UNIT IN THE BRIDGE,,0,0#,ON TUSES FAR UNDER AN INDIGO SKY,IE,3#1,AT V
ESPUZIAN'S FUEL CORE,,1,CAN FIRE  HEAT,5,10$#
50020 DATA"IN A METAL CORRIDOR WITH A DOOR,MD,3#6#1211,IN A SUIT ROOM,,P,10,IN A S
PACE CONTROL ROOM WITH -ORB- BUTTON CONTROLS,,0,10,ON TUSES FAR,UNDER AN INDIGO SKY
 NEW,1,1301,IN MY BUNK    IT HAS A CLEAN SHEETS & A LARGE PILLOW,0,04
50030 DATA"THE CAPTAIN'S CABIN,,,-2,STRANGE DEVICE,1,2,#POLYPS#,3#,2,CRAWLWAY,4#1,2,INSPEL
LING SUIT,11,,,CABIN SUITE,11,2,ME IN CONTAINER,5,,,FUEL CYLINDER,2,,2,INSULATED I
NGOT,1,,,,"IN BETWEEN",,2,GAMMA III,,,-2,MACHEN,7,,2,ISE AWAY,,,,"
50040 DATA"THE LAST ONE I SAW,,,,
```

## DRAGON CONTINUED

```
60065 PRINT"YOU BUMST MPART WITH THE" PRINT"DEPRESSURISATION !" GOTO62000
60070 CLS PRINT"WALKING AROUND IN ",O$(C(4)).PRINT"IS HIGHLY SUSPICIOUS!" PRINT"
GRAKTA  BLOODLINE SPY - " PRINT"SHUOTS YOU!" GOTO62000
60080 CLS PRINT"GRAKTA - BLOODLINE SPY -" PRINT"KILLS YOU FOR TREACHERY AGAIST"
PRINT"THE BLOODLINE EMPIRE!" GOTO62000
60090 CLS PRINT"GRAKTA VAPOURISES YOU ON" PRINT"SUSPICION OF SPYING BY" PRINT"RE
TRIEVING COMPUTERISED DATA." PRINT"YOU PERISH . ." GOTO62000
60100 CLS.PRINT"GRAKTA NOTICES SUIT ROOM DOOR".PRINT"OPEN. FIND'S KEY ON YOU AND"
 PRINT"BLASTS YOU TOWARDS FUNUS" GOTO62000
60110 CLS PRINT"GRAKTA NOTICES SHUTTLE BAY" PRINT"DOOR OPEN, AND SUSPECTS".PRINT
"PLOT AGAINST BLOODLINE EMPIRE".PRINT"YOU ARE EJECTED IN THE" PRINT"SHUTTLE AND
FOREVER LOST" PRINT"IN SPACE!!" GOTO62000
61500 CLS PRINT"YOU HAVE GIVEN UP!" PRINT"THE BLOODLINE WILL BE YOUR" PRINT"MAST
ERS FOREVER!" GOTO62000
62000 PRINT.PRINT"YOUR ADVENTURE IS OVER" INPUT"ANOTHER GAME",A$ IFLEFT$(A$,1)="
Y"THENRUNELSEEND
```

## RUNS ON A 48K SPECTRUM CONVERTED BY RON POTKIN

**The Spectrum version of The Vespozian Affair will auto RUN from line 7000. It can be stopped at any time by use of the BREAK key and to resave use SAVE "ADVENTURE" line 7000.**

```
   0 BORDER 0  PAPER 0  INK 7  B
RIGHT 0  FLASH 0: CLS
  10 DIM L$(15,25)  FOR I=1 TO 1
5  READ L$(I)  NEXT I
  11 DIM B$(15,32)  FOR I=1 TO 1
5  READ B$(I)  NEXT I
  12 DIM O$(19,15)  FOR I=1 TO 1
9  READ O$(I)  NEXT I
  13 DIM R$(12,14)  FOR I=1 TO 1
2  READ R$(I)  NEXT I
  14 DIM E$(15,4)  FOR I=1 TO 15
  READ E$(I)  NEXT I
  15 DIM D$(15,4)  FOR I=1 TO 15
  READ D$(I)  NEXT I
  16 DIM P(19)  FOR I=1 TO 19  R
EAD P(I)  NEXT I
  17 DIM C(19)  FOR I=1 TO 19  R
EAD C(I)  NEXT I
  18 LET P0=0  LET GR=0  DIM O$(
5,32)  DIM U$(1,14)
  19 LET F$="": LET G$="": LET H
$="": LET I$="": LET J$=""
  20 LET X$="": LET Y$="": LET A
$="NOTHING"  LET S$=""  LET K1=1
  LET K2=1
  25 FOR I=1 TO 4  LET O$(I)=""
 NEXT I
  30 LET IN=0
  50 LET JE=0  LET PN=2  LET PL=
PN: LET CT=0  LET JM=-1: LET PV=
6: LET CY=143  LET PF=600  LET C
D=2  LET Y$="A THOUGHT IS FRAMED
 IN YOUR MIND": LET ST=1  LET PI
=999: LET SF=1
  60 LET M$="TAKDROLIFLOOEXAOPEU
NLLOCCLOWERREMINSRAIPREKILSLE"
  70 LET N$="PORSTAFORAFTUP DOWO
UTBUNSHUNOPERSWESBULDOOCRAVES"
  80 LET P$="PSFAUDOBTHEWLRCV"
  90 LET T$="SHUDEVPOLCRRASBSPAC
ONCYLTONBEZGRAMAC005001002003004
KEYROCDISPILDOOBUTAROSCRBUNSHE"
 100 IF PN=6 THEN  IF PL=10 OR P
(10)=99 THEN  LET P(10)=99: LET
P(11)=99  GO TO 103
 102 LET P(10)=6: LET P(11)=6
 103 IF P(8)=10 OR (P(7)=10 AND
C(7)>2) THEN  LET SF=1: GO TO 10
5
 104 LET SF=0
 105 IF PV=4 AND P(3)=99 THEN  L
```

```
ET P(3)=5
 106 IF PN=3 AND C(1)=-4 AND C(5
)<5 THEN  GO SUB 3530  GO TO 605
0
 107 IF C(7)=3 AND P(7)=10 THEN
 LET C(7)=4: LET PF=PF+2000: LET
 Q$(3)="NEW FUEL LOADED"
 108 LET CT=CT+1: IF ST=1 THEN
LET JE=JE+1
 109 IF JE<25 THEN  GO TO 113
 110 IF ST=1 THEN  LET JE=JE+1:
IF JE>24 THEN  LET JE=0: LET PV=
PV+JM: IF PV=CD THEN  GO TO 112
 111 CLS : PRINT  INK 2; BRIGHT
1;"VESPOZIAN PASSING ---"  PRINT
   PRINT  INK 3;R$(PV): PAUSE 80
  GO TO 113
 112 LET ST=2  LET PF=PF-100  CL
S   PRINT  INK 2; BRIGHT 1;"VESP
OZIAN IN ---"  PRINT . PRINT  IN
K 3;R$(PV);" ORBIT": PAUSE 80
 113 IF CT>200 THEN  LET CT=1: L
ET CY=CY+1
 114 IF CD=PV THEN  LET ST=2
 115 IF ST=2 THEN  LET W$="ORBIT
ING"  GO TO 117
 116 LET W$="BEARING ON"
 117 IF PN=10 AND C(5)<5 THEN  G
O TO 6010
 118 IF PN=14 AND A$="GO NORTH"
THEN  GO TO 6055
 120 IF PV=3 AND PN=5 AND P(13)=
99 THEN  LET P(13)=5
 125 IF P(3)=14 THEN  LET P(3)=8
8  LET PI=CY  LET O$(3)="POLYPS
```

```
VANISH INTO ROCKS"
 126 IF CY>PI+19 THEN  LET P
=14  LET PI=CY
 129 IF P(2)=PN AND (PN=9 OR
14) AND (P(19)<>14 OR P(7)
THEN  LET Q$(3)="SWITCH START
OTOR. DRILL". LET Q$(4)="ENGA
 AND SPRAYS DUST!"
 130 IF P(19)=14 AND P(2)=14
 P(7)=14 AND C(7)=2 THEN  LET
19)=88  LET O$(7)="FUEL CONTR
R". LET O$(8)="  "  LET C(7)=
ET O$(3)="SWITCH STARTS MOTOR.
RILL"  LET O$(4)="ENGAGES AND
LLS CONTAINER"
 135 IF P(18)=55 THEN  LET C(
3
 140 IF C(5)>4 AND C(5)<7 AND
N=2 OR PN=7 OR PN=8 OR PN=11
EN  LET IG=IG+1: GO TO 145
 141 LET IG=0
 145 IF IG>0 THEN  LET P(11)=P
 IF IG=5 THEN  GO SUB 3530  GO
O 6070
 146 GO TO 170  IF P(11)=PN TH
 IF INT (RND*7+1)=3 THEN  LET
$(1)="EVER GET THE FEELING . .
 150 IF P(5)<>88 AND P(5)<>PN
D P(5)<>55 AND P(5)<>12 AND P(
<>66 THEN  LET P(5)=88: LET O$
)="STRANGE FEELING . ."  GO TO
60
 155 IF P(6)<>PN AND P(6)<>88
D P(6)<>55 AND P(6)<>12 AND P(
<>66 THEN  LET P(6)=88  LET O$
)="STRANGE FEELING . ."
 160 IF C(4)=2 AND P(18)<>55 A
 P(18)<>66 AND P(18)<>99 THEN
ET P(18)=88  LET Q$(1)="STRANGE
 SOMETHING SEEMS MISSING"  LET
(18)=3
 170 IF P(11)=2 AND PN=2 AND K
14 THEN  GO SUB 3530: GO TO 60
 175 IF PN=7 OR PN=8 OR PN=11
 PN=2 THEN  IF INT (RND*3+1)=3
HEN  LET P(11)=PN  GO TO 180
 176 IF PN=6 AND PL<>10 THEN
TO 180
 177 LET P(11)=88
 180 IF P(18)=55 AND C(18)=4 A
 P(11)=11 AND (PN=12 OR PN=11
HEN  GO SUB 3530  GO TO 6100
 181 IF P(18)>55 AND C(18)=4 A
 P(11)=11 THEN  GO SUB 3530  GO
TO 6100
 185 IF C(1)=3 AND PN<>2 AND PN
>3 THEN  GO SUB 3530  GO TO 61
 200 FOR I=1 TO LEN E$(PN)
 210 IF E$(PN)(I)="P" THEN  LET
```

Illustration David Pugh

```
$$=S$+"PORT. "
 220 IF E$(PN)(I)="S" THEN LET
S$=S$+"'S' BOARD. "
 230 IF E$(PN)(I)="F" THEN LET
S$=S$+"FOR'D. "
 240 IF E$(PN)(I)="A" THEN LET
S$=S$+"AFT. "
 250 IF E$(PN)(I)="U" THEN LET
S$=S$+"UP. "
 260 IF E$(PN)(I)="D" THEN LET
S$=S$+"DOWN. "
 270 IF E$(PN)(I)="O" THEN LET
S$=S$+"OUT. "
 280 NEXT I
 330 CLS  PRINT  INK 7,"I AM"
PRINT  INK 6;L$(PN). PRINT B$(PN
  PRINT . IF LEN S$>0 THEN PRI
NT INK 2,"WAYS -- ", INK 5,S$
335 IF PN=9 OR PN=14 THEN PRIN
. INK 2;"WHICH WAY ?"
340 LET II=1  PRINT . PRINT IN
K 7,"VISIBLE - "; IF PN=15 AND K
(2)21 THEN  GO TO 345
342 FOR I=1 TO 19: IF P(I)=PN T
HEN  PRINT  INK 5,O$(I)
344 NEXT I
345 IF PN=5 THEN  PRINT : PRINT
 INK 3,"VESPOZIAN"
360 PRINT  IF A$(>"" THEN  PRI
NT INK 7;"------YOU SAID ": INK
6 A$  PRINT : FOR I=1 TO 4. IF Q
$(I)(1)(>" " THEN  PRINT  INK 5;
Q$(I)
365 FOR I=1 TO 4  IF Q$(I)(>""
THEN  PRINT  INK 5,Q$(I)
370 NEXT I
375 IF Q$(2)(1 TO 2)="OK" THEN
BEEP .05,10
380 PRINT . PRINT  INK 7;"------
WHAT NOW",
390 LET PL=PN: FOR I=1 TO 5. LE
T Q$(I)="": NEXT I: LET A$="". L
ET G$="". LET H$="": LET I$="".
LET J$="". LET S$=""  INPUT A$
IF CODE (A$(1))>90 THEN  GO SUB
9850
400 LET J=1. IF LEN A$<3 THEN
GO TO 4000
401 IF A$(I)(>" " THEN  LET J=J
+1: LET G$=G$+A$(1): LET A$=A$(2
TO ): GO TO 401+2*(A$="")
402 LET I$=A$(2 TO )
403 LET H$=(G$+"    ")(1 TO 3)
404 LET J$=(I$+"    ")(1 TO 3)
405 IF I$="" THEN  LET J=0
406 LET A$=G$+" "+I$
410 IF H$="INV" THEN  GO TO 460
411 IF H$="WAI" THEN  GO TO 500
412 IF H$="QUI" OR H$="HEL" THE
N GO TO 600
414 IF G$="GO" OR H$="GET" THEN
GO TO 425
415 LET X$=M$: LET Y$=H$: GO SU
B 3500  IF J=0 THEN  GO TO 4000
I DON'T KNOW HOW TO "+G$  GO TO
100
 416 LET K1=INT ((J-1)/3+1)
 417 LET X$=T$: LET Y$=J$  GO SU
B 3500
 419 IF J=0 THEN  LET Q$(2)="WHA
T IS A "+I$+"?". GO TO 100
 420 LET K2=INT ((J-1)/3)+1
 421 GO TO (K1=1)*430+(K1=2)*450
+(K1=3)*700+(K1=4)*800+(K1=5)*80
0+(K1=6)*900+(K1=7)*1000+(K1=8)*
1100+(K1=9)*1200+(K1=10)*1300+(K
1=11)*1400+(K1=12)*1500+(K1=13)*
700+(K1=14)*1600+(K1=15)*1700+(K
1=16)*1800
 425 LET X$=N$: LET Y$=J$  GO SU
B 3500  IF J=0 THEN  GO TO 4010
 426 LET X$=E$(PN): LET Y$=P$(J
-1)/3+1): GO SUB 3500: IF J=0 TH
EN  GO TO 4010
 427 LET PN=CODE (D$(PN)(J))-64
 GO TO 4020
 430 IF K2=20 THEN  GO TO 4030
 431 IF P(11)=PN THEN  GO TO 608
0
 432 IF K2>19 THEN  GO TO 4070
 433 IF P(K2)=55 THEN  GO TO 404
0
 434 IF P(K2)(>PN THEN  GO TO 40
50
 435 IF C(K2)=-2 THEN  GO TO 400
0
 436 IF C(K2)=-1 THEN  GO TO 406
0
 440 IF (K2=8 OR (K2=7 AND C(7)=
3)) AND P(9)(>55 THEN  LET Q$(2)
="TO HOT TO HANDLE"  GO TO 100
 441 IF IN)3 THEN  LET Q$(2)="I'
M OVERLOADED ALREADY!"  GO TO 10
0
 442 LET IN=IN+1. LET P(K2)=55
GO TO 4020
 450 IF K2>19 THEN  GO TO 4070
 451 IF P(K2)(>55 THEN  GO TO 40
70
 452 IF K2=2 AND (PN(>9 AND PN(>
14) THEN  GO SUB 3530: GO TO 606
0
 453 LET IN=IN-1  IF PN=15 THEN
 LET P(K2)=66  LET Q$(3)="SLIPPE
D IT UNDER PILLOW"  GO TO 4020
 454 LET P(K2)=PN
 455 GO TO 4020
 460 PRINT  INK 3;"'"I AM CARRYI
NG: "
 461 IF IN=0 THEN  LET Q$(2)="NO
THING". GO TO 100
 462 LET J=1
 463 FOR I=1 TO 19
 464 IF P(I)=55 THEN  PRINT O$(I
)
 470 NEXT I: PAUSE 200. GO TO 10
0
 500 LET CT=CT+15. IF ST=1 THEN
 LET JE=JE+15
 510 GO TO 4020
 600 LET Q$(2)="LOOK AROUND AND"
 LET Q$(3)="EXAMINE THINGS. TRY
WORDS"  LET Q$(4)="LIKE INSERT,
LIFT, WAIT ETC."  GO TO 100
 700 IF K2(>21 OR PN(>15 THEN  G
O TO 4000
 701 LET Q$(2)="NOTHING!"  FOR I
=1 TO 19  IF P(I)=66 THEN  LET P
(I)=15. LET Q$(2)="IT'S STILL TH
ERE!"  GO TO 100
 702 NEXT I. GO TO 100
 800 IF K2(>24 THEN  GO TO 812
 801 IF PN=8 THEN  LET Q$(2)="I
SEE BUTTON MARKED". LET Q$(3)="-
THINK CONTROL-". GO TO 100
 802 IF PN=11 AND E$(11)(1 TO 3)
="PD " THEN  LET E$(11)(1 TO 3)=
"PDL"  LET Q$(2)="WOW! A HIDDEN
BULKHEAD"  GO TO 100
 805 IF PN=10 AND E$(10)="S   "
THEN  LET E$(10)="SC  ". LET P(4
)=10. LET Q$(2)="AHA!"  GO TO 10
0
 806 IF PN=7 THEN  LET Q$(2)="CO
URSE DATA ON SCREEN". GO TO 100
 807 IF PN=3 THEN  IF C(1)=-3 TH
EN  LET Q$(3)="INNER DOOR OPEN."
  LET Q$(4)="OUTER DOOR CLOSED."
  GO TO 4020
 808 IF PN=3 THEN  IF C(1)=-4 TH
EN  LET Q$(3)="INNER DOOR CLOSED
"  LET Q$(4)="OUTER DOOR OPEN"
GO TO 4020
 812 IF K2=20 THEN  GO TO 4030
 813 IF K2=2 THEN  IF P(2)(>55 A
ND P(2)(>PN THEN  GO TO 4030
 814 IF K2=2 THEN  LET Q$(2)="IT
HAS HOLLOW CYLINDRICAL CUTTER"
 LET Q$(3)="AND SENSITIVE PRESSU
RE SWITCH"  GO TO 100
 815 IF (PN=3 OR PN=2) AND K2=23
 THEN  LET Q$(2)="SIGN -AIRLOCK
CONTROL-". GO TO 100
 820 IF K2(18 AND K2)12 THEN  IF
 P(K2)(>55 THEN  GO TO 4070
 821 IF K2(18 AND K2)12 THEN  GO
 TO (K2=13)*870+(K2=14)*871+(K2=
15)*872+(K2=16)*873+(K2=17)*874
 825 IF K2=20 AND PN=15 THEN  LE
T Q$(2)="LOOKS STRANGELY LUMPY
."  GO TO 4020
 826 IF K2=25 AND PN=7 THEN  GO
TO 4500
 830 LET Q$(3)="NOTHING SPECIAL"
: GO TO 4020
 870 LET Q$(2)="LABEL -YUSES-".
GO TO 100
 871 LET Q$(2)="LABEL -POLYPS-":
 GO TO 100
 872 LET Q$(2)="LABEL -FUNUS-":
GO TO 100
 873 LET Q$(2)="LABEL -CONFIDENT
```

...e shuttle was sent down to the murky surface of Far Funus

```
IAL-"  GO TO 100
 874 LET Q$(2)="LABEL -BLOODLINE
-"  GO TO 100
 900 IF K2<>22 THEN  GO TO 4000
 901 IF PN<>11 THEN  GO TO 4050
 902 IF P(11)=11 AND PN=11 THEN
 GO TO 6100
 904 IF C(18)=2 THEN  LET Q$(2)=
"LOCKED!"  GO TO 100
 905 IF C(18)=4 THEN  LET Q$(2)=
"ALREADY OPEN"  GO TO 100
 906 IF P(8)=11 THEN  GO TO 6000
 910 LET C(18)=4  LET E$(11)="PO
R", GO TO 4020
1000 IF K2<>22 THEN  GO TO 4000
1001 IF PN<>11 THEN  GO TO 4050
1002 IF C(18)<>2 THEN  GO TO 4090
1003 IF P(18)<>55 THEN  GO TO 40
60
1004 LET C(18)=3  GO TO 4020
1100 IF K2<>22 THEN  GO TO 4000
1101 IF PN<>11 THEN  GO TO 4050
1103 IF P(11)=11 AND PN=11 THEN
 GO TO 6080
1104 IF C(18)<>3 OR P(18)<>55 TH
EN  GO TO 4060
1106 LET C(18)=3  GO TO 4020
1200 IF K2<>22 THEN  GO TO 4000
1201 IF PN<>11 THEN  GO TO 4050
1203 IF P(11)=11 AND PN=11 THEN
 GO TO 6080
1204 IF C(18)<>4 THEN  GO TO 406
0
1206 LET C(18)=3  LET E$(11)=E$(
11," TO 3"  GO TO 4020
1300 IF K2<>5 AND K2<>6 THEN  GO
 TO 4000
1301 IF P(K2)<>55 THEN  GO TO 40
70
1302 IF C(5)=K2 THEN  LET Q$(2)=
"WHAT'S THIS I M WEARING THEN?"
 GO TO 100
1303 IF C(5)<>4 THEN  LET Q$(2)="
WEARING "+Q$(K2)  GO TO 100
1304 LET C(5)=K2  LET Q$(K2)=U$(
K2)+" WORN"  GO TO 4020
1400 IF K2<>5 AND K2<>6 OR C(5
)=2 THEN  GO TO 4030
1401 LET C(5)=2  LET Q$(K2)=Q$(K
2)  GO TO 4020
1500 IF K2=20 THEN  GO TO 4030
1501 IF K2<13 OR K2>17 THEN  GO
 TO 4000
1502 IF P(K2)<>55 THEN  GO TO 40
70
1503 IF PN<>7 THEN  LET Q$(2)="N
O COMPUTER TO TAKE IT"  GO TO 10
0
1505 IF P(11)=7 AND K2>12 AND K2
<18 THEN  GO SUB 3530: GO TO 609
0
1510 CLS  PRINT  INK 2, BRIGHT
1;Q$(K2)  PRINT  INK 3, BRIGHT 1
,"SPINS IN ITS DRIVE . ."  FOR I
=1 TO 150  NEXT I  CLS  GO TO (
K2=13)*1550+(K2=14)*1561+(K2=15)
*1563+(K2=16)*1565+(K2=17)*1567
1550 INK 5  PRINT "-YUSES SYSTEM
-"  PRINT  PRINT "STAR SYSTEM A
DJACENT TO FUNUS"  PRINT "IT HAS
 3 PLANETS."  PRINT  PRINT P$(1
)  PRINT "- BALL OF FIRE -"  PR
INT  PRINT P$(10)  PRINT "  IN
HABITED BY MINING COLONY."  PRIN
T "NO FINDS."  PRINT
1560 PRINT P$(9)  PRINT " - REMO
TE DEAD PLANET -"  GO TO 1569
1561 PRINT "- POLYPS-"  PRINT "FR
EQUENT GALAXY IN MILLIONS"  PRIN
T "AROUND ENERGY RICH PLANETS."
 PRINT "REGENERATE EVERY 20 YEAR
S."  PRINT "ACTIVE POLYPS CAN TU
RN DEAD"  PRINT "PLANET INTO GRE
ENHOUSE EFFECT"  PRINT "PLANET.
RICH IN STELLAR ENERGY"
1562 PRINT "AFTER 20 YEARS . ."
 GO TO 1569
1563 PRINT "-FUNUS SYSTEM-"  PRI
NT "STAR WITH 7 PLANETS."  PRINT
 "IN ORDER FROM FUNUS -"  PRINT
  PRINT P$(2)," -MOLTEN ROCK"  P
RINT P$(3)" -UNINHABITABLE"  PRIN
T P$(4)" -GREENHOUSE EFFECT"  PR
INT P$(5)"  INHABITED"
1564 PRINT P$(6)  PRINT P$(7)  P
RINT "  BOTH I'M MADE OF"  P
RINT P$(8)  PRINT "  LUMP OF R
OCK"  GO TO 1569
1565 PRINT "  CAPTAIN'S LOG-"  PR
INT "BEARING TO DOCK WITH BLOODL
INE"  PRINT "STARSHIP'S IN ORBIT
."  PRINT "MISSION ACCOMPLISHED -
 D'MARK'L"  PRINT "ELEMENTS CONFI
RMED ON"  PRINT "THE ORE'S. PITY
 BLOODLINE MINE"  PRINT "BENEFIT
"
1566 PRINT "CLOAD TO GET OUT OF
THIS"  PRINT "COMPUTER, HOPE I GE
T A L"  PRINT "BLOODLINE 'PC'. M
ACHEN."  PRINT "TAL FIRETHEN I'L
 NEED GIVEN ME"  PRINT "THE CREDI
T. CHN I GET RID OF"  PRINT "MIN
E. THE ONLY PILOT ABOARD."  GO TO
 1569
1567 PRINT "  BLOODLINE-"  PRINT
"TERRANNIC EMPIRE TRADING"  PRINT
 "CONTROL ON THEMSY SUPPLIES"
 PRINT "FROM GREENHOUSE PLANETS
."  PRINT "ON WHICH INTERSTELLAR
 POWER"  PRINT "TRADING"  PRINT
 "STARSHIPS ARE FOUND SYSTEM"
 PRINT "FOR SOLDIERS FIGHTER
TO"  PRINT "QUELL REBELS."
1569 INK 7  FOR I=1 TO 1000  NEX
T I  LET Q$(2)="YOU REMOVE THE D
ISK . .". GO TO 100
1600 IF K2<>23 THEN  GO TO 4020
1602 IF P(11)=2 AND PN=2 THEN  G
O TO 6000
1603 IF PN=8 THEN  IF P(11)=8 TH
EN  GO TO 6000
1604 IF PN=8 THEN  LET Q$(2)="MA
CHEN, THE LIZARD PILOT"  LET Q$(
3)="RESTRAINS YOU"  GO TO 100
1606 CLS  IF PN<13 THEN  GO TO
 1661
1607 IF PF<1 THEN  GO TO 6020
1608 GO SUB 3515
1609 PRINT  INK 5,"HEADING.(H/)"
 PRINT  PRINT  INK 3,"CRYOGEN./
C)"  PRINT  PRINT  INK 4,"LASER
.(L)"  PRINT  PRINT  INK 6 "END
OF INPUT,(E)"
1612 LET V$=INKEY$  IF V$="H" TH
EN  GO TO 1618
1613 IF V$="C" THEN  GO TO 1633
1614 IF V$="L" THEN  GO TO 1639
1615 IF V$="E" THEN  GO TO 4020
1616 GO TO 1612
1618 LET J=0  GO SUB 3515  PRINT
  INK 2, BRIGHT 1,"CURRENTLY -"
 PRINT  INK 6 W$  PRINT  INK 6,R
$(CD)  PRINT  PRINT  INK 5,"NEW
 DESTINATION?"  INPUT U$(1)
1620 FOR I=1 TO 12  IF U$(1)=K$(
I) THEN  LET J=I
1621 NEXT I  IF J=0 THEN  PRINT
 INK 2, BRIGHT 1,U$(1)," NOT ON
 DATABASE"  GO SUB 3527  GO TO 1
606
1624 IF J=LO THEN  GO TO 1606
1625 IF J=PV THEN  LET JM=1  GO
TO 1627
1626 LET JM=1
```

```
LET TM=0  FOR I=1 TO
11  IF I=J THEN  LET PF=PF-100
NINT  PRINT "COURSE CORRECTION
APPLIED"  PRINT  PRINT "NEW BEA
RING -  PRINT R$(CD)  PRINT
PRINT  PRINT "ALL - " PF," PILGRATH"
HOUSE "DV"
1620 INK 1  IF IF=1 THEN  GO TO
1630
1625 FOR I=1 TO 1000
1627 GO SUB 351'  INK 5  PRINT
 PRINT "CRYOGENIC CONTROL"  PRIN
T "ENERGY TO FREEZE CREW - 10 PE
R C."  PRINT  PRINT "HOW MANY CE
NTURY FREEZE "  INPUT F$  IF
VAL(F$)*10>PF THEN  PRINT  PR
INT "FUEL DEFICIENCY."  PRINT  I
NK 1,"* OPERATION ABORTED *
"  GO SUB 3525  INK 7  GO TO 160
6
1630 LET PF=PF-10*VAL(F$)  LET
T=T+VAL(F$)  PRINT  INK 2, BR
IGHT 1, FLASH 1,"STAND BY"  FOR
I=1 TO 100: NEXT I  GO SUB 3530
 LET PN=15  LET Q$(2)="YAWN . .
!"  GO TO 100
1639 GO SUB 3515  PRINT  INK 4,
LASER CONTROL"  PRINT
1642 PRINT  INK 4,"TARGET?"  INP
UT U$(1)  IF U$(1)="STARGATE
" THEN  GO TO 1646
1643 LET J=0: FOR I=1 TO 12  IF
R$(I)=U$(1) THEN  LET J=I  LET I
=12  NEXT I
1644 NEXT I
1645 IF J=0 THEN  PRINT  INK 2,
BRIGHT 1,U$(1)," NOT ON DATABASE
"  GO SUB 3527  GO TO 1606
1646 PRINT  INK 2, BRIGHT 1,"TAR
GETED ON ",U$(1)  FOR I=1 TO 150
 NEXT I: IF PF<1000 THEN  PRINT
  INK 3, FLASH 1,"FUEL DEFICIENC
Y"
1647 IF U$(1)="STARGATE
HEN  GO TO 1650
1649 IF T<PV THEN  PRINT "OUT O
F RANGE"  GO TO 1652
1650 IF U$(1)<>"STARGATE
ND P%<  THEN  PRINT  INK 6,U$(
1)" OUT OF RANGE"  GO TO 1652
1651 GO TO 1655
1652 PRINT  PRINT  INK 2, BRIG
HT 1 "COMPUTER OVERRIDE"  PRINT
 INK 2, BRIGHT 1,"* OPERATION AB
ORTED *"  GO SUB 3525  GO TO 160
1655 GO SUB 3540  IF U$(1)="ST
RGATE  " THEN  GO TO 6040
1656 GO TO 6040
1661 IF PN=2 THEN  GO TO 1664
1664 IF PN=2 THEN  GO TO 1666
1665 IF PN<>4 THEN  GO TO 4050
1667 GO SUB 3515  PRINT  INK 5,
THINK 'DESTINATION' OR 'END'
NPUT U$(1)  IF U$(1)="ESCAPIN
" THEN  IF T<1 THEN  GO TO 1
F  INK 5, BRIGHT 1 "SHUTTLE AT
DOCKING"  PRINT  PRINT  INK 3
 BRIGHT 1,"* MISSION ABORTED *
 GO SUB 3525  GO TO 160
1668 IF U$(1)="DESTRUCTION
HEN  PRINT  INK 2,"IN BRIGHT 1
$ DAY"  GO SUB 3540  PRINT  I
 "DOOMING"  GO SUB 3525  LET
(1)=  LET  " GO TO
OM
1670 IF U$(1)="
 4000
1671 LET  FOR I=1 TO 12
U$(1)=K$(I) THEN  LET J=I
1672 NEXT I  IF J=0 THEN  PRINT
  INK 2, BRIGHT 1 F$,"NOT ON DA
```

```
BASE"  GO SUB 3527  GO TO 100
1681 IF J<>PV THEN  PRINT  INK 6
,U$(1),"OUT OF RANGE"  GO SUB 35
20  GO TO 100
1684 IF ST=1 THEN  PRINT  INK 3,
"VESPOZIAN NOT IN "  PRINT  INK
U$(1),"  ORBIT"  PRINT  PRINT
INK 2, BRIGHT 1,"* OPERATION AB
ORTED *"  GO SUB 3525  GO TO 100
1687 INK 5  IF J<>3 THEN  PRINT
"CONDITIONS ON ",U$(1)  PRINT "N
OT SUITABLE FOR SHUTTLE"  PRINT
"LANDING".  PRINT  PRINT  INK 2,
BRIGHT 1;"* OPERATION ABORTED *
"  GO SUB 3525  INK 7  GO TO 100
1690 IF C(1)<>-4 THEN  PRINT  IN
K 4,"SHUTTLE BAY DOORS CLOSED"
GO SUB 3520. PRINT  INK 2, BRIGH
T 1,"* OPERATION ABORTED *". GO
SUB 3525  GO TO 100
1691 PRINT  INK 3,"HEADING - ",U
$(1)  GO SUB 3520  PRINT  INK 5,
"LANDED ON ",U$(1)  LET P(1)=9
LET D$(4)="I    ". GO SUB 3520  G
O TO 100
1692 IF PN=2 THEN  IF C(1)=-2 TH
EN  LET C(1)=-3  LET B$(2)="BLUE
BUTTON BY OPEN BULKHEAD"  LET E
$(2)="PFL "  GO TO 4020
1693 IF PN=2 THEN  IF C(1)=-3 TH
EN  LET C(1)=-2  LET B$(2)="BLUE
BUTTON BY CLOSED BULKHEAD"  LET
E$(2)="PF  ": GO TO 4020
1694 IF PN=3 AND C(1)=-3 THEN  L
ET C(1)=-4  LET E$(3)="OT  "  LE
T D$(3)="ED  "  LET Q$(3)="INNER
DOOR CLOSES"  LET Q$(4)="OUTER
DOOR OPENS"  GO TO 4020
1695 IF PN=3 AND C(1)=-4 THEN  L
ET C(1)=-3  LET E$(3)="TP  ". LE
T D$(3)="DB  "  LET Q$(3)="OUTER
DOOR CLOSES". LET Q$(4)="INNER
DOOR OPENS"  GO TO 4020
1698 GO TO 4050
1700 LET Q$(2)="NO CHANCE-TOO RI
SKY"  GO TO 100
1800 LET Q$(2)="I'M NOT TIRED"
GO TO 100
2500 LET J=0: FOR I=1 TO LEN X$
STEP LEN Y$
2505 IF Y$=X$(I TO I-1+LEN Y$) T
HEN  LET J=I. LET I=LEN X$+3  RE
TURN
2510 NEXT I. RETURN
2515 CLS : PRINT  INK 6,K$  PRIN
T  RETURN
2520 FOR I=1 TO 300. NEXT I  RET
URN
2525 FOR O=1 TO 6  BEEP .1,7: BE
EP .1,2  NEXT O  PAUSE 150. RETU
RN
2526 BEEP 3,20: RETURN
2527 FOR O=1 TO 10: BEEP .05,6
BEEP .05,10. NEXT O. RETURN
2530 FOR I=1 TO 15. CLS : PAPER
I: BORDER 0. PRINT : PAUSE 5: PA
PER 7  BORDER 7: PRINT : NEXT I:
PAPER 0  BORDER 0. INK 7: CLS
RETURN
2540 FOR I=1 TO 10  CLS : PAPER
I: BORDER 0  PRINT . PAUSE 5. PA
PER 2  BORDER 2  PRINT . NEXT I:
PAPER 0  BORDER 0: INK 7: CLS :
RETURN
2550 RETURN
3500 GO TO 4020
3900 LET Q$(2)="IMPOSSIBLE!"  GO
TO 100
3910 LET Q$(2)="I CAN'T GO "+I$
GO TO 100
3920 LET Q$(2)="OK"  GO TO 100
3930 LET Q$(2)="REFERENCE DISC B
```

```
Y ITS NUMBER"  GO TO 100
4040 LET Q$(2)="I'M ALREADY CARR
YING IT"  GO TO 100
4050 LET Q$(2)="I DON'T SEE IT H
ERE"  GO TO 100
4060 LET Q$(2)="I CAN'T YET!"  G
O TO 100
4070 LET Q$(2)="I'M NOT CARRYING
IT": GO TO 100
4080 LET Q$(2)="YOU MUST BE JOKI
NG!". GO TO 100
4090 LET Q$(2)="OK-NOTHING HAPPE
NS". GO TO 100
4100 LET Q$(2)="CAP'N WINKS AT M
E AND"  LET Q$(3)="GLANCES AT GP
AKTA"  GO TO 100
4110 LET Q$(2)="HUH?"  GO TO 100
4500 INK 5. CLS  PRINT "CLONE Y
EAR.";CY;"  ZONETIME ",CT: PRIN
T  PRINT "-------------------
----------"
4501 PRINT  PRINT "VESPOZIAN "
W$  PRINT R$(CD). IF ST=1 THEN
PRINT "ETA:- ",CT+ABS (CD-PV)*25
-JE
4505 PRINT . PRINT "NEAREST BODY
- ",R$(PV)  IF PV=2 THEN  PRINT
"BLOODLINE STARGATE"
4510 PRINT  PRINT "FUEL - ";PF,
" PICORATH"  PRINT  PRINT "LASE
R - ",  IF PF(1000 THEN  PRINT "
INOPERATIVE". GO TO 4520
4511 PRINT "OPERATIVE"
4520 PRINT  PRINT "-------------
--------------------"
4521 INK 7. PRINT  PRINT  INK 4
,"THINK CONTROL REPORTING": FOR
I=1 TO 550  NEXT I  GO TO 4020
5000 DATA "IN THE CREWS QUARTERS
","IN THE RESEARCH LAB BY","IN T
HE SHUTTLE BAY","IN A SHUTTLE","
OUTSIDE THE HULL","IN THE CAPTAI
NS CABIN","IN THE NAVIGATION AND
","ON THE BRIDGE","ON YUSES FAR
UNDER","AT VESPOZIANS FUEL CORE"
5001 DATA "IN A METAL GANGWAY WI
TH A","IN A SUIT ROOM","IN A SEC
RET CONTROL ROOM","ON YUSES FAR"
,"IN MY BUNK-IT HAS CLEAN"
5002 DATA "LINED WITH BUNKS","BL
UE BUTTON BY A CLOSED BULKHEAD",
"BLUE BUTTON ON WALL","WITH-THIN
K CONTROL-BUTTON","OF THE VESPOZ
IAN","","COMPUTER ROOM","","A PU
RPLE SKY","I CAN FEEL HEAT"
5003 DATA "DOOR","","WITH DUPLIC
ATE CONTROL","UNDER AN INDIGO SK
Y","SHEETS AND LARGE PILLOW"
5004 DATA "AUTO SHUTTLE","STRANG
E DEVICE","#POLYPS#","CPANLWHY",
"ASBESTOS SUIT","SPACE SUIT","ME
TAL CONTAINER","FUEL CYLINDER","
INSULATED TONGS","CAP'N BEZEL","
GRAKTA","MACHEN","DISK 005","DIS
K 001","DISK 002","DISK 003","DI
SK 004","KEY","GLOWING ROCK"
5005 DATA "FUNUS","LITTLE FUNUS"
,"GYRATES","ROTH","BULGEN","GREA
TER BULGEN","OUTER FUNUS","FAR F
UNUS","YUSES FAR","MID YUSES","Y
USES NEAR","YUSES"
5006 DATA "DSB","PF","P","O","V"
,"DC","AFUP","AU","TE","S","PD",
"P","O","NEW","U"
5007 DATA "HBO","AGC","B","C","C
","GJ","BHKF","GA","DN","KF","JG
ML","K","K","NNI","A"
5008 DATA 3,2,99,99,12,12,6,10,2
,6,7,8,66,2,8,6,7,13,99
5009 DATA -2,2,2,-2,2,2,2,2,2,-2
,-2,-2,2,2,2,2,2,2,-2
6000 INK 2  CLS : PRINT "GRAKTA,
```

```
 BLOODLINE SPY, BLASTS"  PRINT "
YOU WITH HIS LASER"  PRINT "YOU
ARE NOW A PILE OF"  PRINT "YUSES
 DUST!"  GO TO 6200
6010 INK 2  CLS  PRINT "AARGH .
. !"  PRINT "WENT INTO THE FUEL
 CORE WITHOUT"  PRINT "PROTECTIO
N - SEARING HEAT . ."  GO TO 620
0
6020 INK 4  CLS  PRINT "WITH NO
 FUEL, THE VESPOZIAN". PRINT "WA
NDERS AIMLESSLY OUT"  PRINT "OF
CONTROL, LOST IN SPACE"  GO TO 6
200
6030 INK 2  CLS  PRINT "TOO CLO
SE PROXIMITY". PRINT "THE VESPOZ
IAN IS RIPPED APART". PRINT "BY
THE EXPLOSION"  GO TO 6200
6040 INK 5  CLS  PRINT "WHAM!"
 PRINT "THE BLOODLINE STARGATE I
S"  PRINT "VAPOURISED. YOU HAVE
SUCCEEDED"  PRINT "IN YOUR MISSI
ON! CONGRATULATIONS"  GO TO 6202
6050 INK 5. CLS  PRINT "INNER D
OOR CLOSES"  PRINT "AIR EVACUATE
D"  PRINT "OUTER DOOR OPENS - NO
 SPACE SUIT". PRINT "YOU PERISH
AND DRIFT INTO SPACE"  GO TO 620
0
6055 INK 5. CLS . PRINT "YOU HAV
E STUMBLED BLINDLY ONTO". PRINT
"RAZOR SHARP ROCK". PRINT  PRIN
T "YOUR SUIT HAS RIPPED AND YOU"
 PRINT "DIE FROM LACK OF OXYGEN
". GO TO 6200
6060 INK 2  CLS : PRINT "PRESSUR
E SWITCH OPERATES"  PRINT "DRILL
 ENGAGES AND BORES THROUGH". PRI
NT "CRAFT."
6061 INK 4  IF C(5)=6 THEN  PRIN
T "YOU DRIFT OFF INTO SPACE"  PR
INT "AND PERISH WHEN OXYGEN RUNS
 OUT": GO TO 6200
6065 INK 2. PRINT "YOU BURST APA
RT WITH THE": PRINT "DEPRESSURIS
ATION!"  GO TO 6200
6070 INK 5. CLS  PRINT "WALKING
 AROUND IN ",O$(K2): PRINT "HIGH
LY SUSPICIOUS!"  PRINT "GRAKTA,
BLOODLINE SPY BLASTS YOU": GO TO
 6200
6080 INK 2: CLS  PRINT "GRAKTA,
 BLOODLINE SPY, BLASTS": PRINT "
YOU FOR TREACHERRY AGAINST THE":
 PRINT "BLOODLINE EMPIRE!"  GO T
O 6200
6090 INK 2  CLS  PRINT "GRAKTA
VAPOURISES YOU ON"  PRINT "SUSPI
CION OF SPYING BY"  PRINT "RETRI
EVING COMPUTERISED DATA": PRINT
"YOU PERISH . . "  GO TO 6200
6100 INK 4. CLS  PRINT "GRAKTA
NOTICES SUIT ROOM DOOR": PRINT "
OPEN. FINDS KEY ON YOU AND". PRI
NT "BLASTS YOU TOWARDS FUNUS". P
RINT "YOU PERISH . ."  GO TO 620
0
6110 INK 5  CLS  PRINT "GRAKTA
NOTICES SHUTTLE BAY"  PRINT "DOO
R OPEN, AND SUSPECTS A PLOT". PR
INT "AGAINST THE BLOODLINE EMPIR
E"  PRINT "YOU ARE EJECTED IN TH
E SHUTTLE"  PRINT "AND FOREVER L
OST IN SPACE"
6200 FOR O=10 TO -5 STEP -1  BEE
P .05,O  NEXT O  INK 7  PRINT
PRINT . PRINT "YOUR ADVENTURE IS
 OVER"  PRINT "IF YOU WOULD LIKE
 ANOTHER"  PRINT "GAME THEN PRES
S ""Y""  GO TO 6205
6202 INK 7  GO SUB 3525. GO SUB
3526  GO SUB 3527. PRINT  PRINT
. PRINT "YOUR ADVENTURE IS OVER
```

```
"  PRINT "IF YOU WOULD LIKE ANOT
HER"  PRINT "GAME THEN PRESS ""Y
"""
6205 IF INKEY$="" THEN  GO TO 62
05
6210 IF INKEY$="Y" THEN  CLS   C
LEAR   RUN 8
6215 PRINT   PRINT  INK 6, FLASH
 1,"GOODBYE THEN"  PAUSE 100  NE
W
7000 PAPER 0  BORDER 0  INK 2  C
LS
7005 PRINT AT 2,5,"
     "
7010 PRINT "
     "
7015 PRINT "
     "
7020 PRINT "
     "
7025 PRINT
7030 PRINT "
```

```
     "
7035 PRINT "
     "
7040 PRINT "
     "
7045 PRINT "
     "
7050 PRINT . PRINT
7055 PRINT "
           "
7060 PRINT "
           "
7065 PRINT "
          "
7070 PRINT "
          "
7075 PRINT   PRINT   PRINT  INK
5,"By Keith Campbell. @ C&VG 198
3."
7080 PRINT AT 21,7, INK 6,"PRESS
 ""P"" TO PLAY"
7085 IF INKEY$="" THEN  GO TO 70
85
```

```
7090 IF INKEY$="P" OR INKEY$
 THEN  GO TO 8000
7095 GO TO 7085
8000 IF PEEK 23560>64 AND PEE
3560<91 THEN  INK 2. CLS   P
8007 CLS . INK 2. PRINT  INK
WOULD YOU PLEASE ENSURE THAT"
RINT . PRINT "YOUR SPECTRUM I
N THE": PRINT . PRINT """CAP
 MODE"" BEFORE PLAY"
8010 PRINT . PRINT "CHANGE TO
CAPITAL MODE NOW."  PRINT
T . PRINT   PRINT "PRESS ""A""
WHEN READY"
8015 INPUT Q$
8017 IF Q$="A" THEN  GO TO 80
8018 GO TO 8015
8020 INK 2. CLS   RUN 8
9050 PRINT AT 21,0;"YOU ARE NO
USING CAPITAL'S"  PAUSE 200
NT AT 21,0,"
          " RETURN
```

## RUNS ON A BBC MODEL B.

## CONVERTED BY STEVE WILLIS

The display of the BBC is far superior in the Teletext mode (MODE 7) and of course the BBC has its very flexible sound options. It is in these two areas where the BBC translation has been enhanced, using a set pattern of colours for the displays with 'meaningful'(!) sounds.

Because space is tight on the BBC, especially when a large number of string arrays are in use, I have adopted a space saving way of inserting coloured displays.

This does require some work and the method for a machine with a 0.1 operating system is more complicated.

In order to use the listing provided, colour is not needed but mods will be required in the DATA strings (lines 1520-1580). Where I have shown words highlighted in yellow the words should be omitted and 1 space inserted instead. To use colour then the word must be replaced by its respective colour control character instead of a space. Following is a list of colour control character/keyboard equivalents:—

| | | | |
|---|---|---|---|
| DIV | RED | 1 | A |
| EOR | GREEN | 2 | B |
| MOD | YELLOW | 3 | C |
| OR | BLUE | 4 | D |
| ERROR | MAGENTA | 5 | E |
| LINE | CYAN | 6 | F |
| OFF | WHITE | 7 | G |
| STEP | flashing on | 8 | H |
| SPC | flashing off | 9 | I |

On the 1.0 or later operating systems these can be inserted using the shift+ a function key (where the function key number is the number in the 3rd column above). On 0.1 systems the function keys must be programmed using commands such as *KEY1 !!!A to give red; the remaining keys are as in the 4th column above, e.g. *KEY2 !!!B for green.

Please note however that, once typed in, listing these DATA lines will display the keyword and not the colour. This is fine as long as you do *not* edit any part of the line. If you edit a DATA line showing keywords then *every* keyword in that line must be replaced by the colour again.

For the strings in the text colour control display lines. These can be inserted between the first " and the first character of the string. The string will then be displayed in colour during listing as well as running. A spinoff is that the remainder of the listed line, after the end of the string, will also appear in colour to the end of the display line; this does not have any bearing on the operation of the program.

"You traitor", yelled Grakta, lashing out

```
   10MODE7
   20PRINTTAB(0,2)CHR$(131)CHR$(
157)
   30FORI%=3TO4:PRINTTAB(0,I%)CH
R$(131)CHR$(141)CHR$(255)CHR$(25
5)CHR$(255)"      THE VESPOZIAN IN
CIDENT      "CHR$(255)CHR$(255)CHR
$(255):NEXT
   40PRINTTAB(0,5)CHR$(131)CHR$(
157)
   50PRINT''TAB(4)" Written by K
eith Campbell for"'':FORI%=6TO7:
PRINTTAB(7)CHR$(141)" COMPUTER &
 VIDEO GAMES":NEXT:PRINT''''"  BB
C micro translation by Steve Wil
lis"''''
   60IFPAGE<>&E00THENPAGE=&1200
   70CHAIN"VESPOZ"
   80END
```

```
>
   10CLEAR:CLS:A$="RUN"
   20DIML$(14),L1$(14),E$(14),D$
(14),O$(18),P%(18),C%(18),NB$(11
),Q$(4),V$(8)
   30FORI%=0TO14:READL$(I%),L1$(
I%),E$(I%),D$(I%):NEXT:FORI%=0TO
18:READ O$(I%),P%(I%),C%(I%):NEX
T:FORI%=0TO11:READNB$(I%):NEXT
   40Q%=RND(-TIME):IN%=0:K1%=0:P
N%=1:CT%=0:JM%=-1:PV%=6:CY%=143:
PF%=600:CD%=2:AT$=" A THOUGHT IS
 FRAMED IN YOUR MIND":ST%=1:PZ%=
999:SF%=1
   50WV$="TAKDROLIFLOOEXAOPEUNLL
OCCLOWEAREMINSRAIPREKIL"
   60WG$="PORSTAFORAFTUP DOWOUTB
UNSHUNOREASWESBULDOOCRAVES"
   70WD$="PSFAUDOBTHEWLRCV"
   80WN$="SHUDEVPOLCRAASBSPACONC
YLTONBEZGRAMAC005001002003004KEY
ROCDISPILDOOBUTAROSCR"
   90IFPN%<>5THENRT%=0ELSEIFPL%=
6THENRT%=5:IFRT%=5THENP%(9)=5:P%
(10)=5ELSEP%(9)=99:P%(10)=6
  100IFP%(7)=9OR(P%(6)=9ANDC%(6)
>2)THENSF%=1ELSESF%=0
  110IFPV%=3ANDP%(2)=99THENP%(2)
=4
  120IFPN%=2ANDC%(0)=-4ANDC%(4)<
>5THENGOSUB1950:GOTO1650
  130IFC%(6)=3ANDP%(6)=9THENC%(6
)=4:PF%=PF%+2000:O$(3)=" NEW FUE
L LOADED"
  140CT%=CT%+1:IFST%<>1THENGOTO1
70ELSEJE%=JE%+1:IFJE%<25THENGOTO
170ELSEJE%=JE%-25:PV%=PV%+JM%:CL
S
  150IFPV%=CD%THENST%=2:PF%=PF%-
100:SOUND0,-15,8,10:FORX%=6TO7:P
RINTTAB(11,X%)CHR$(141)" VESPOZI
AN IN":NEXT:FORX%=9TO10:PRINTTAB
(19-(LEN(NB$(PV%))+6)/2,X%)CHR$(
141)NB$(PV%);" ORBIT":NEXT:GOSUB
1940:GOTO170
  160SOUND0,-15,8,10:FORX%=6TO7:
PRINTTAB(7,X%)CHR$(141)" VESPOZI
AN PASSING":NEXT:FORX%=9TO10:PRI
NTTAB(16-LEN(NB$(PV%))/2,X%)CHR$
(141)NB$(PV%):NEXT:GOSUB1940
  170IFCT%=200THENCT%=1:CY%=CY%+
1
  180IFCD%=PV%THENST%=2
  190IFST%=2THENOD$=" ORBITTING"
ELSEOD$=" BEARING ON"
  200IFPN%=9ANDC%(4)<>4THEN1600
  210IFPV%=2ANDPN%=4ANDP%(12)=99
THENP%(12)=4
  220IFP%(2)=13THENP%(2)=88:PZ%=
CY%:O$(3)=" POLYPS VANISH INTO T
HE ROCKS"
  230IFCY%>PZ%+19THENP%(18)=13:P
Z%=CY%
  240IFP%(1)=PN%AND(PN%=8ORPN%=1
3)AND(P%(18)<>13ORP%(6)<>13)THEN
SOUND0,-15,3,100:O$(3)=" SWITCH
STARTS MOTOR. DRILL":O$(4)=" ENG
AGES AND SPRAYS DUST !"
  250IFP%(18)=13ANDP%(1)=13ANDP%
(6)=13ANDC%(6)=2THENP%(18)=88:O$
(6)=" FUEL CONTAINER":C%(6)=3:SO
UND0,-15,3,100:O$(3)=" SWITCH ST
ARTS MOTOR. DRILL":O$(4)=" ENGAG
ES AND FILLS CONTAINER."
  260IFP%(17)=55THENC%(3)=3
  270IFC%(4)>3AND(PN%=10RPN%=6OR
PN%=7ORPN%=10)THENIG%=IG%+1ELSEI
G%=0
  280IFIG%>0THENP%(10)=PN%:IFIG%
=5THENGOSUB1950:GOSUB1680
  290IFP%(10)=PN%THENIFRND(7)=3T
HENO$(1)=" EVER GET THE FEELING
. . ?"
  300IFP%(4)<>55ANDP%(4)<>11ANDP
%(4)<>66THENP%(4)=88:O$(1)=" STR
ANGE FEELING . ."ELSEIFP%(5)<>55
ANDP%(5)<>11ANDP%(5)<>66THENP%(5
)=88:O$(1)=" STRANGE FEELING . .
"
  310IFC%(3)=2ANDP%(17)<>55ANDP%
(17)<>66ANDP%(17)<>99THENP%(17)=
88:O$(1)=" STRANGE, SOMETHING SE
EMS MISSING":C%(17)=3
  320IFP%(10)=1ANDPN%=1ANDK1%=14
THENGOSUB1950:GOTO1690
  330IFPN%=1ORPN%=6ORPN%=7ORPN%=
10THENIFRND(3)=2THENP%(10)=PN%EL
SEP%(10)=88
  340IFP%(17)=55ANDPN%<>11ANDPN%
<>10ANDC%(17)>2THENGOSUB1950:GOT
O1710
  350IFC%(0)=3ANDPN%<>1ANDPN%<>2
THENGOSUB1950:GOTO1720
  360FORI%=1TOLEN(E$(PN%))
  370IFMID$(E$(PN%),I%,1)="P"THE
NEX$=EX$+" PORT."
  380IFMID$(E$(PN%),I%,1)="S"THE
NEX$=EX$+" S'BOARD."
  390IFMID$(E$(PN%),I%,1)="F"THE
NEX$=EX$+" FOR'D."
  400IFMID$(E$(PN%),I%,1)="A"THE
NEX$=EX$+" AFT."
  410IFMID$(E$(PN%),I%,1)="U"THE
NEX$=EX$+" UP."
  420IFMID$(E$(PN%),I%,1)="D"THE
NEX$=EX$+" DOWN."
  430IFMID$(E$(PN%),I%,1)="O"THE
NEX$=EX$+" OUT."
  440NEXT
  450II%=0:V$(II%)=" VISIBLE: ".
FORI%=0TO18:IFP%(I%)=PN%THENOS$=
O$(I%)ELSENEXT:GOTO480
  460IFLEN(V$(II%))+LEN(OS$)<35T
HENV$(II%)=V$(II%)+OS$+". ":OS$=
""ELSEII%=II%+1:GOTO460
```

```
  470NEXT
  480CLS:PRINT" I AM";L$(PN%)''L
1$(PN%)'':IFLEN(EX$)>0THEN PRINT
" WAYS: ";EX$'
  490IFLEN(V$(0))>9THENPRINTV$(0
)'
  500FORI%=1TO8:IFV$(I%)<>""THEN
PRINTV$(I%)'
  510NEXT
  520PRINT'" ======>YOU SAID ";A
$':FORI%=1TO4:IFQ$(I%)<>""THENPR
INTQ$(I%)'
  530NEXT
  540PRINT'" =========>WHAT NOW";
  550PL%=PN%:FORI%=0TO4:V$(I%)="
":Q$(I%)="":NEXT:A1$="":A2$="":A
3$="":A4$="":EX$="":INPUTA$
  560IFLEN(A$)<3THEN1740ELSEA2$=
LEFT$(A$,3)
  570IFA2$="INV"THENGOTO710ELSEI
FA2$="WAI"THENGOTO740ELSEIFA2$="
QUI"THEN760ELSEIFA2$="HEL"THEN76
0ELSEIFA2$="SLE"THEN1510
  580J%=0:FORI%=1TOLEN(A$):IFMID
$(A$,I%,1)=" "THENJ%=I%:I%=LEN(A
$)
  590NEXT:IFJ%=0THENGOTO1850ELSE
A1$=LEFT$(A$,J%-1):A3$=RIGHT$(A$
,LEN(A$)-J%):A4$=LEFT$(A3$,3)
  600IFA1$="GO"ORA2$="GET"THEN66
0
  610X$=WV$:Y$=A2$:GOSUB1910:IFJ
%=0THENQ$(2)=" I DON'T KNOW HOW
TO "+A1$:GOTO90ELSEK1%=(J%-1)/3+
1
  620X$=WN$:Y$=A4$:GOSUB1910
  630IFJ%=0THENQ$(2)=" WHAT IS A
 "+A3$+"?":GOTO90
  640K2%=(J%-1)/3
  650ON K1% GOTO670,690,770,790,
790,930,950,960,970,980,1000,101
0,770,1160,1500
  660X$=WG$:Y$=A4$:GOSUB1910:IFJ
%=0THEN1750ELSEX$=E$(PN%):Y$=MID
$(WD$,(J%-1)/3+1,1):GOSUB1910:IF
J%=0THEN1750ELSEPN%=VAL(MID$(D$(
PN%),(J%-1)*2+1,2)):GOTO1760
  670IFK2%=19THEN1770ELSEIFK2%>1
8THEN1740ELSEIFP%(K2%)=55THEN178
0ELSEIFP%(K2%)<>PN%THEN1790ELSEI
FC%(K2%)<-1THEN1740ELSEIFC%(K2%)
=-1THEN1800ELSEIFP%(9)=PN%THEN18
40
  680IF(K2%=7OR(K2%=6ANDC%(6)=3)
)ANDP%(8)<>55THENQ$(2)=" TOO HO
T TO HANDLE !":GOTO90ELSEIFIN%>3
THENQ$(2)=" I'M OVERLOADED ALREA
DY !":GOTO90ELSEIN%=IN%+1:P%(K2%
)=55:GOTO1760
  690IFK2%>18THEN1810ELSEIFP%(K2
%)<>55THEN1810ELSEIFK2%=1AND(PN%
<>8ANDPN%<>13)THENGOSUB1950:GOTO
1660ELSEIN%=IN%-1:IFPN%=14THENP%
(K2%)=66:Q$(3)=" SLIPPED IT UNDE
R THE PILLOW."ELSEP%(K2%)=PN%
  700GOTO1760
  710IFIN%=0THENQ$(2)=" I AM CAR
RYING: NOTHING !":GOTO90ELSEQ$(2
)=" I AM CARRYING: ":J%=1:FORI%=
0TO18
  720IFP%(I%)<>55THENGOTO730ELSE
IFLEN(Q$(J%+1))+LEN(O$(I%))<35TH
ENQ$(J%+1)=Q$(J%+1)+O$(I%)+"."ELSEQ$(J%+2)=O$(I%)+".":J%=J%+1.IF
J%=5THENI%=18:NEXT:GOTO90ELSE NE
XT
  730NEXT:GOTO90
  740CT%=CT%+15 IFST%=1THENJE%=J
E%+15
  750GOTO1760
  760Q$(2)=" ALWAYS LOOK ARDUND
AND".Q$(3)="    EXAMINE THINGS.
TRY WORDS".Q$(4)="          LIKE IN
SERT, LIFT, WAIT . ." GOTO90
  770IFK2%<>20ORPN%<>14THEN1740E
LSEQ$(2)=" NOTHING !".FORI%=0TO1
8:IFP%(I%)=66THENP%(I%)=14:Q$(2)
=" IT WAS STILL THERE !"
  780NEXT.GOTO90
  790IFK2%<>23THEN820ELSEIFPN%=7
THENQ$(2)=" I SEE A BUTTON MARKE
D":Q$(3)="          -THINK CONTROL-"
GOTO90ELSEIFPN%=10ANDLEN(E$(10))
=2THENE$(10)=E$(10)+"L".Q$(2)="
      WOW !!!  ".L1$(10)=L1$(10)+"
      AND HIDDEN BULKHEAD":GOTO9
0
  800IFPN%=9ANDE$(9)="S"THENE$(9
)="SC".P%(3)=9 Q$(2)="       AHA !
!! ".GOTO90ELSEIFPN%=6THENQ$(2)=
" COURSE DATA IS ON THE SCREEN"
GOTO90
  810IFPN%=2THENIFC%(0)=-3THENQ$
(3)=" INNER DOOR OPEN":Q$(4)=" O
UTER DOOR CLOSED":GOTO1760ELSEIF
C%(0)=-4ANDPN%=2THENQ$(3)=" INNE
R DOOR CLOSED":Q$(4)=" OUTER DOO
R OPEN":GOTO1760
  820IFK2%=19THEN1770ELSEIFK2%=1
ANDP%(1)<>55ANDP%(1)<>PN%THEN177
0ELSEIFK2%=1THENQ$(2)=" IT HAS A
 HOLLOW CYLINDRICAL CUTTER":Q$(3
)="     AND SENSITIVE PRESSURE SW
ITCH":GOTO90
  830IF(PN%=20RPN%=1)ANDK2%=22TH
ENQ$(2)=" A SIGN SAYS - AIRLOCK
CONTROL -":GOTO90
  840IFK2%>16ORK2%<12THEN850ELSE
IFP%(K2%)<>55THEN1810ELSE ONK2%-
11 GOTO 880,890,900,910,920
  850IFK2%=20ANDPN%=14THENQ$(3)=
" LOOKS STRANGELY LUMPY . ." GOT
O1760
  860IFK2%=24ANDPN%=6THEN1860
```

```
3700$%(2)="       NUTHING SPECIAL
":GOTO1760
3800$%(2)=" LABEL -YUSES-":GOTO
3900
3900$%(2)=" LABEL -POLYPS-":GOT
O90
9000$%(2)=" LABEL -FUNUS-":GOTO
40
9100$%(2)=" LABEL -CONFIDENTIAL
":GOTO90
9200$%(2)=" LABEL -BLOODLINE-":
GOTO90
930IFK2%<>21THEN1740ELSEIFPN%<
10THEN1790ELSEIFC%(17)=2THEN0$(
2)=" LOCKED ! ":GOTO90 ELSEIFC%
(17)=4THEN0$(2)=" ALREADY OPEN !
":GOTO90ELSEIFP%(7)=10THEN1590
940C%(17)=4 E$(10)=E$(10,4)+"P"
:GOTO1760
950IFK2%<>21THEN1740ELSEIFPN%<
10THEN1790ELSEIFC%(17)>2THEN183
0ELSEIFP%(17)<>55THEN1800ELSEC%(
17)=3 :GOTO1760
960IFK2%<>21THEN1740ELSEIFPN%<
10THEN1790ELSEIFC%(17)<>3ORP%(1
7)<>55THEN1800ELSEC%(17)=2 :GOTO1
760
970IFK2%<>21THEN1740ELSEIFPN%<
10THEN1790ELSEIFC%(17)<>4THEN18
00ELSEC%(17)=3:E$(10)=LEFT$(E$(1
0),3):GOTO1760
980IFK2%<>4ANDK2%<>5THEN1740
990IFP%(K2%)<>55THEN1810ELSEIF
C%(4)=K2%THEN0$(2)=" WHAT'S THIS
 I'M WEARING THEN ?" :GOTO90ELSEI
FC%(4)<2THEN0$(2)=" WEARING "+LE
FT$(O$(C%(4)),LEN(O$(C%(4)))-7)
:GOTO90ELSEC%(4)=K2%:O$(K2%)=O$(K
2%)+" (WORN)" :GOTO1760
1000IFK2%<>4ANDK2%<>5ORC%(4)=
2THEN1820ELSEC%(4)=2:O$(K2%)=LEF
T$(O$(K2%),LEN(O$(K2%))-7):GOTO1
760
1010IFK2%=19THEN1770ELSEIFK2%<1
2ORK2%>16THEN1740ELSEIFP%(K2%)<
55THEN1810ELSEIFM%<6THEN0$(2)=
" NO COMPUTER TO TAKE IT" :GOTO90
1020IFP%(10)=6ANDK2%>11ANDK2%<1
7THENGOSUB1950 :GOTO1760
1030CLS:FORX%=ST06 PRINTTAB(7,X
%)CHR$(141)O$(K2%):NEXT FORX%=8T
09:PRINTTAB(2,X%)CHR$(141)" SPIN
S IN IT'S DRIVE . . ":NEXT SOUND
0,-15,7,100:TIME=0:REPEAT UNTIL
TIME>500:CLS ONK2%-11GOTO1040,10
60,1080,1100,1120
1040PRINTTAB(12)" -YUSES SYSTEM
-":TAB(6)" STAR SYSTEM 7 LIGHT-
YEARS":TAB(6)" FROM FUNUS . HAS
 3 PLANETS.":TAB(2)NB$(10)," -
BALL OF FIRE":TAB(2)NB$(3)," -
 INHABITED BY MINING":"
       COLONY, NO FINDS"
1050PRINT'TAB(2)NB$(8)," - REM
OTE DEAD PLANET":GOTO1140
1060PRINTTAB(12)" -POLYPS-":TA
B(4)" FREQUENT GALAXY IN MILLION
S":TAB(4)" AROUND ENERGY-RICH P
LANETS.":TAB(4)" REGENERATE EVE
RY 20 YEARS.":TAB(4)" ACTIVE PO
LYPS CAN TURN DEAD":TAB(1)" PLA
NET INTO GREENHOUSE - EFFECT"
1070PRINTTAB(2)" PLANET, RICH I
N STELLAR ENERGY":TAB(8)" AFTER
 20 YEARS . ."':GOTO1140
1080PRINTTAB(12)" -FUNUS SYSTEM
-":TAB(7)" STAR WITH 7 PLANETS.
":TAB(2)" IN ORDER FROM FUNUS.-
":TAB(4)NB$(1)," - (MOLTEN ROCK
)":TAB(4)NB$(2)," GYRATES - (UN
INHABITED)":TAB(4)NB$(3)," - (G
REENHOUSE-EFFECT)":TAB(4)NB$(4)
," - (INHABITED)":TAB(4)NB$(5)
;":TAB(4)NB$(6)," - (ICY
 WASTE)":TAB(4)NB$(7)," - (LUMP
 OF ROCK)":GOTO1140
1100PRINTTAB(10)" -CAPTAIN'S LO
G-":TAB(2)" BEAMING TO DOCK WIT
H BLOODLINE":TAB(4)" STARGATE I
N GYRATES ORBIT.":TAB(2)" MISSI
ON ACCOMPLISHED - D'TAAN'S":TAB
(5)" EXPERIMENTS CONFIRM POLYP"
:" THEORY. PITY BLOODLINE WILL
 BENEFIT !"
1110PRINT'TAB(2)" GLAD TO GET S
HOT OF THIS CREW !":TAB(3)" BLO
ODLINE SPY. MACHEN,":TAB(3)" TH
E TIAITHEN LIZARD. GIVES ME":TA
B(3)" THE CREEPS. CAN'T GET RID
 OF":TAB(2)" HIM. - THE ONLY PIL
OT ABOARD !":GOTO1140
1120PRINTTAB(12)" -BLOODLINE-":
:TAB(5)" TYRANNICAL EMPIRE KEEPI
NG":TAB(5)" CONTROL ON ENERGY S
UPPLIES":TAB(5)" FROM GREENHOUS
E PLANETS -":TAB(4)" ON WHICH I
NTERSTELLAR TRAVEL":TAB(4)" DEP
ENDS.":TAB(4)" STARGATE IN FUNU
S SYSTEM CAN"
1130PRINT'TAB(2)" SUMMONS CRUIS
ERS TO QUELL REBELS.":GOTO1140
1140*FX21,0
11500$%(2)=" YOU REMOVE THE DISK
 . .":PRINTTAB(3,24)" PRESS SPAC
E BAR TO CONTINUE":D=GET:IFD=32
0THEN90ELSE1140
1160IFK2%<>22THEN1760
1170IFPN%=7ANDP%(10)=7THEN1590E
LSEIFPN%=7THEN0$(2)=" MACHEN, TH
E LIZARD PILOT":O$(3)="
  RESTRAINS YOU.":GOTO90
1175SOUND0,-10,2,5
1180IFPN%<>12THEN1350ELSEIFSF%=
0THEN1610ELSEGOSUB1930
1190PRINT'TAB(4)" HEADING, CRYO
```

▷▷▷▷

```
GEN, LASER, END"
 1200*FX21,0
 1210Z$=INKEY$(100):IFZ$="H"THEN
1220ELSEIFZ$="C"THEN1260ELSEIFZ$
="L"THEN1290ELSEIFZ$="E"THEN1760
ELSE1210
 1220J%=0:GOSUB1930:PRINT" CURRE
NTLY ";OD$;":  ";NB$(CD%)'' INPUT"
 NEW DESTINATION===> "AA$:AA$="
"+AA$:FORI%=0TO11:IFAA$=NB$(I%)T
HENJ%=I%
 1230NEXT:IFJ%=0THENPRINT'" ";AA
$;" NOT ON THE DATABASE":TIME=0:
REPEAT UNTIL TIME>200:GOTO1180
 1240IFJ%=CD%THEN1180ELSEIFJ%>PV
%THENJM%=1ELSEJM%=-1
 1250ST%=1:JE%=0:CD%=J%:PF%=PF%-
100:SOUND0,-15,1,10:PRINT'" COUR
SE CORRECTION APPLIED"''" NEW BE
ARING:  ";NB$(CD%)''" FUEL:  ";PF%
;" PICAROTH":GOSUB1940:IFPF%<1TH
EN1610ELSE1180
 1260GOSUB1930:PRINT'TAB(11)" CR
YOGENIC CONTROL"''TAB(3)" ENERGY
 TO FREEZE CREW - 10 PR/CY"':INP
UT" HOW MANY CLONE-YEARS FREEZE"
,AA$
 1270IFVAL(AA$)*10>PF%THENSOUND0
,-15,2,5:PRINT'TAB(11)" FUEL DEF
ICIENCY"''TAB(10)" INTERLOCK OVE
RRIDE"''TAB(9)"  * OPERATION ABO
RTED *":GOSUB1940:GOTO1180
 1280PF%=PF%-10*VAL(AA$):CY%=CY%
+VAL(AA$):PRINT'TAB(15)"  STAND
BY":GOSUB1940:GOSUB1950:PN%=14:Q
$(2)=" YAWN . . !":ENVELOPE2,1,2
0,10,0,1,1,6,127,-1,0,-7,126,126
:SOUND1,2,122,200:GOTO90
 1290GOSUB1930:PRINTTAB(13)" LAS
ER CONTROL"'
 1300INPUT'TAB(4)" TARGET =======
> "AA$:IFAA$="STARGATE"THEN1320E
LSEAA$=" "+AA$:J%=0:FORI%=0TO11:
IFNB$(I%)=AA$THENJ%=I%:I%=11:NEX
T ELSE NEXT
 1310IFJ%=0THENPRINT'" ";AA$;" N
OT ON DATABASE":GOSUB1940:GOTO11
80
 1320PRINT'" TARGETED ON ";AA$:T
IME=0:REPEAT UNTIL TIME>500:IFPF
%<1000THENPRINT'TAB(12)" FUEL DE
FICIENCY"ELSEIFJ%<>PV%AND(AA$="S
TARGATE"ANDPV%<>2)THENPRINT'TAB(
12)" OUT OF RANGE"ELSE1340
 1330SOUND0,-15,2,5:PRINT'TAB(11
)" COMPUTER OVERRIDE"''TAB(8)"
* OPERATION ABORTED *":GOSUB1940
:GOTO1180
 1340GOSUB1950:FORI%=0TO1000:NEX
T:GOSUB1950:FORI%=0TO1000:NEXT:G
OSUB1950:FORI%=0TO1000:NEXT:IFAA
$<>"STARGATE"THEN1620ELSE1630
 1350IFPN%=20RPN%=1THEN1460ELSEI
FPN%<>3THEN1790
 1360GOSUB1930
 1370PRINT" THINK 'DESTINATION'
OR 'END'":INPUT'" THINK COMMAND.
 "AA$:AA$=" "+AA$:IFAA$<>" VESPO
ZIAN"THEN1380ELSEIFP%(0)=2THENPR
INT'TAB(9)" SHUTTLE AT VESPOZIAN
"''TAB(9)"  * OPERATION ABORTED
*":SOUND0,-15,2,5:GOSUB1940:GOTO
90
 1375PRINT'TAB(10)" IN FLIGHT VE
SPOZIAN":GOSUB23000:FORXX%=7TO8:
PRINTTAB(11,XX%)CHR$(141)"  DOCK
ING":NEXT:GOSUB1940:P%(0)=2:D$(3
)="2*":GOTO90
 1380IFLEFT$(AA$,1)="E"THEN1760
 1390J%=0:FORI%=0TO11:IFAA$=NB$(
I%)THENJ%=I%
 1400NEXT:IFJ%=0THENPRINT'" ";AA
$;" NOT ON DATABASE":GOSUB1940.G
OTO90
 1410IFJ%<>PV%THENPRINT'" ";AA$;
" OUT OF RANGE":GOSUB1940:GOTO90
 1420IFST%=1THENPRINT'" VESPOZIA
N NOT IN  ";AA$;" ORBIT"''TAB(8)
"  * OPERATION ABORTED * ":SOUND
0,-15,2,5.GOSUB1940.GOTO100
 1430IFJ%<>8THENPRINT'"  CONDI
TIONS ON ";AA$''"  NOT SUITABL
E FOR SHUTTLE LANDING"''TAB(8)"
 * OPERATION ABORTED * ":SOUND0,
-15,2,5.GOSUB1940:GOTO90
 1440IFC%(0)<>-4THENPRINT'TAB(7)
" SHUTTLE BAY DOORS CLOSED":GOSU
B1940.SOUND0,-15,2,5.PRINT'TAB(8
)"  * OPERATION ABORTED * ":GOSU
B1940:GOTO90
 1450PRINT'" HEADING - ";AA$:GOS
UB23000:FORXX%=7TO8:PRINTTAB(5,X
X%)CHR$(141)" LANDED ON ";AA$.NE
XT:P%(0)=8:D$(3)="8*":GOSUB1940
GOTO100
 1460SOUND1,-10,1,60 IFPN%=1THEN
IFC%(0)=-2THENC%(0)=-3:L1$(1)="
BLUE BUTTON BY OPEN BULKHEAD":E$
(1)="PFL":GOTO1760ELSEIFC%(0)=-
3ANDPN%=1)THENC%(0)=-2.L1$(1)="
BLUE BUTTON BY CLOSED BULKHEAD".
E$(1)="PF":GOTO1760
 1470SOUND1,-10,1,60:IFPN%=2ANDC
%(0)=-3THENC%(0)=-4.E$(2)="OT":D
$(2)="4*3*":Q$(3)="  INNER DOOR C
LOSES":Q$(4)="  OUTER DOOR OPENS"
:GOTO1760
 1480IFPN%=2ANDC%(0)=-4THENC%(0)
=-3:E$(2)="TP":D$(2)="3*1*":Q$(3
)="  OUTER DOOR CLOSES":Q$(4)="  I
NNER DOOR OPENS":GOTO1760
 1490GOTO1790
 15000$(2)="  TOO RISKY !":GOTO90
```

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```
15100$(2)=" I'M NOT TIRED !".GO
TO90
 1520DATAMODIN THE CREW'S QUARTE
RS,MOD    LINED WITH BUNKS,DSB,7
*1*14,LINEIN THE RESEARCH LABORA
TORY,LINE  BLUE BUTTON BY CLOSED
 BULKHEAD,PF,0*6*2*,ERRORIN THE
SHUTTLE BAY,LINE   BLUE BUTTON O
N THE WALL,P,1*.DIVIN A SHUTTLE,
LINEWITHDIV-THINK CONTROL-LINEBU
TTON,0,2*
 1530DATAOROUTSIDE THE HULL,OR
   OF THE VESPOZIAN,V,2*,MODIN T
HE CAPTAIN'S CABIN,,DC,6*9*,LINE
IN THE NAVIGATION AND,    LINECO
MPUTER ROOM,AFUP,1*7*105*.EORON
THE BRIDGE,,AU,6*0*.ERRORONEOR'Y
USES  FAR'ERRORUNDER,     ERRORA
 PURPLE SKY.TE.3*13
 1540DATADIVAT VESPOZIAN'S FUEL
CORE.      DIVI CAN FEEL THE HEA
T,S,105*,MODON A METAL GANGWAY W
ITH A DOOR,,PD,9*6*1211,LINEIN A
 SUIT ROOM,,P,10,DIVIN A SECRET
CONTROL ROOM,     DIVWITH DUPLIC
ATE CONTROL,0,10,ERRORONEOR'YUSE
S FAR'.     ERRORUNDER AN INDIGO
 SKY
 1550DATANEW,13138*,MODIN MY BUN
K - IT HAS CLEAN,     MODSHEETS
AND A LARGE PILLOW,U,0*
 1560DATAEORAUTO-SHUTTLE,2,-2,EO
RSTRANGE DEVICE,1,2,MOD*POLYPS*,
99,2,EORCRAWLWAY,99,-2,EORASBEST
OS SUIT,11,2,EORSPACE SUIT,11,2,
EORMETAL CONTAINER,5,2,EORFUEL C
YLINDER,9,2,EORINSULATED TONGS,1
,2,EORCAP'N BEZEL,5,-2,EORGRAKTA
,6,-2,EORMACHEN,7,-2,EORDISK 005
,66,2
 1570DATAEORDISK 001,1,2,EORDISK
 002,7,2,EORDISK 003,5,2,EORDISK
 004,6,2,EORKEY,12,2,EORGLOWING
ROCK,99,-2
 1580DATAEORFUNUS,EORLITTLE FUNU
S,EORGYRATES,EORROTH,EORBILGEN,E
ORGREATER BILGEN,EOROUTER FUNUS,
EORFAR FUNUS,EORYUSES FAR,EORMID
 YUSES,EORYUSES NEAR,EORYUSES
 1590CLS:SOUND0,-15,6,10:PRINT''
" GRAKTA, BLOODLINE SPY, BLASTS
YOU"''"      WITH HIS LASER."''"
YOU ARE NOW A PILE OF YUSES DUST
 !":GOTO1730
 1600CLS:SOUND0,-15,7,50:PRINT''
"      AARGH . . !"''" WENT INTO
 THE FUEL CORE WITHOUT"''" PROTE
CTION - SEARING HEAT . . !".GOTO
1730
 1610CLS:PRINT''" WITH NO FUEL,
THE VESPOZIAN"''"      WANDERS A
IMLESSLY OUT OF"''"
CONTROL - LOST IN SPACE".GOTO17
0
 1620CLS.SOUND0,-15,6,100:PRINT'
'TAB(10)"  TOO CLOSE PROXIMITY"'
'" THE VESPOZIAN IS RIPPED APART
 BY"''" THE TREMENDOUS EXPLOSION
 !":GOTO1730
 1630CLS:SOUND0,-15,6,100:FORX%=
1TO2:PRINTTAB(16,X%)CHR$(141)" W
HAM !":NEXT:FORX%=4TO5:PRINTTAB(
7,X%)CHR$(141)" THE BLOODLINE ST
ARGATE IS".NEXT:FORX%=7TO8:PRINT
TAB(4,X%)CHR$(141)" VAPOURISED.
'YOU HAVE SUCCEEDED".NEXT
 1640FORX%=10TO11:PRINTTAB(2,X%)
CHR$(141)" IN YOUR MISSION! CONG
RATULATIONS!":NEXT:GOTO1730
 1650CLS.SOUND0,-15,6,30 PRINT''
TAB(11)" INNER DOOR CLOSES"''TAB
(13)" AIR EVACUATED"''TAB(11)" O
UTER DOOR OPENS"''TAB(12)"  NO S
PACE SUIT !"''TAB(7)" YOU PERISH
, AND DRIFT OUT"''TAB(11)" INTO
SPACE . . .":GOTO1730
 1660CLS:SOUND0,-15,3,50:PRINT''
TAB(3)" PRESSURE SWITCH OPERATES
. DRILL"''TAB(3)" ENGAGES AND BO
RES THROUGH CRAFT.".IFC%(4)=5THE
NPRINT'TAB(7)" YOU DRIFT OFF INT
O SPACE"''TAB(4)" AND PERISH WHE
N OXYGEN RUNS OUT.":GOTO1730
 1670SOUND0,-15,6,50:PRINT'TAB(4
)" YOU BURST APART WITH THE"''TA
B(20)" DEPRESSURISATION !":GOTO1
730
 1680CLS:SOUND0,-15,6,25:PRINT''
" WALKING AROUND IN AN";LEFT$(O$
(C%(4)),14)''" HIGHLY SUSPICIOUS
 !"''" GRAKTA , BLOODLINE SPY ,
 SHOOTS YOU !".GOTO1730
 1690CLS:SOUND0,-15,6,25:PRINT''
" GRAKTA , BLOODLINE SPY , SHOOT
S"''TAB(4)" YOU FOR TREACHERY AG
AINST"''TAB(8)" THE BLOODLINE EM
PIRE !":GOTO1730
 1700CLS:SOUND0,-15,6,25:PRINT''
" GRAKTA VAPOURISES YOU ON"''TAB
(4)" SUSPICION OF SPYING BY"''"
RETRIEVING COMPUTERISED DATA !"'
'" YOU PERISH . . !":GOTO1730
 1710CLS.SOUND0,-15,6,20:PRINT"
GRAKTA NOTICES SUIT ROOM DOOR OP
EN."''TAB(5)" FINDS KEY ON YOU A
ND BLASTS "''"                YOU T
OWARDS FUNUS !":GOTO1730
 1720CLS:PRINT" GRAKTA NOTICES S
HUTTLE BAY DOOR"''"      OPEN, AND
 SUSPECTS A PLOT AGAINST"''"
    THE BLOODLINE EMPIRE."''" Y
OU ARE EJECTED IN THE SHUTTLE"''
"          AND ARE LOST FOREVER IN
 SPACE !!":GOSUB23000:GOTO1730
```

```
1730FORX%=20TO21:PRINTTAB(6,X%)
CHR$(141)" YOUR ADVENTURE IS OVE
R !":NEXT:INPUTTAB(11,23)" ANOTH
ER GAME",A$:IFLEFT$(A$,1)="Y"THE
N CLEAR:RUN ELSE CLS:END
17400$(2)=" IMPOSSIBLE !":GOTO9
0
17500$(2)=" I CAN'T GO "+A3$:GO
TO90
17600$(2)=" OK":GOTO90
17700$(2)=" REFERENCE DISK BY I
T'S NUMBER":GOTO90
17800$(2)=" I'M ALREADY CARRYIN
G IT !":GOTO90
17900$(2)=" I DON'T SEE IT HERE
" GOTO90
18000$(2)=" I CAN'T - YET !":GO
TO90
18100$(2)=" I'M NOT CARRYING IT
!":GOTO90
18200$(2)=" YOU MUST BE JOKING
!":GOTO90
18300$(2)=" OK - NOTHING HAPPEN
S":GOTO90
18400$(2)=" CAP'N WINKS TO ME A
ND".0$(3)="      GLANCES AT GRAK
TA":GOTO90
18500$(2)=" HUH ?":GOTO90
1860CLS:PRINT'" CLONE YEAR: ";
CY%;"          ZONETIME: ";CT%'" ";
STRING$(38,"_")'" VESPOZIAN ":O
D$,TAB(24)NB$(CD%):IFST%=1THENPR
INT'" ETA: ",TAB(17)CT%+ABS(CD%-
PV%)*25-JE%
1870PRINT'" NEAREST BODY: ";TAB
(16)NB$(PV%):IFPV%=2THENPRINT'TA
B(10)" BLOODLINE STARGATE"
1880PRINT'" FUEL: ";TAB(17)PF%;
"  PICAROTH"'" LASER: ";:IFPF%<
1000THENPRINTTAB(17)"INOPERATIVE
"ELSEPRINTTAB(17)"OPERATIVE"
1890SOUND1,-15,1,60:PRINT'" ";
STRING$(39,"_")'TAB(5)"  THINK C
ONTROL REPORTING ":TIME=0:REPEAT
UNTIL TIME>1000:GOTO1760
1900RETURN:REM**FLASHING SCREEN
HERE
1910J%=0:FORI%=1TOLEN(X$)STEPLE
N(Y$):IFY$=MID$(X$,I%,LEN(Y$))TH
ENJ%=I%:I%=LEN(X$):NEXT:RETURN
1920NEXT:RETURN
1930CLS:FORX%=2TO3:PRINTTAB(0,X
%)CHR$(131)CHR$(141)AT$:NEXT:PRI
NT:RETURN
1940TIME=0:REPEAT UNTIL TIME>70
0
1950FORI%=0TO10:CLS:GOSUB1900:N
EXT:RETURN
1960PRINTTAB(3)" THE ONLY TUBES
 OPEN ARE THOSE"'TAB(3)" MARKED
'DTAAN' AND 'MACHEN'"'TAB(3)" =
=====> WHICH ONE";:AA$="":INPUTA
A$:IFLEFT$(AA$,1)="D"THENPN%=15E
LSEIFLEFT$(AA$,1)="M"THENPN%=16
1970GOTO1760
23000ENVELOPE1,1,0,5,0,9,1.8,8,-
1,0,-1,82,80:SOUND0,-15,6,50:SOU
ND1,1,1,200:SOUND1,0,1,20:FORX%=
53TO1STEP-1:SOUND1,-(INT(X%DIV4)
),X%,2:NEXT:RETURN
```

## RUNS ON AN ATARI 400/800. CONVERTED BY SIMON GOODWIN

```
10 REM VESPOZIAN AFFAIR - C&VG 1983
20 REM Author P.Norris
30 REM Atari conversion by S.Goodwin
32 READ N1,N2,N3,N4,N5,N6,Q2A,Q2B:OPEN #
N1,N4,N,"K"
33 DATA 1,2,3,4,5,6,65,96
35 GRAPHICS N:POKE 82,N:POSITION 9,N:? "
 THE VESPOZIAN AFFAIR ":? :? :? "You pla
y the part of D'Taan, Scientific"
40 ? "Officer aboard the Bloodline Stars
hip  Vespozian. Your (private) mission
is to blast the Bloodline Stargate out";
45 ? " of":? "existence.":? :? "All the
information you need is          availabl
e on board the Vespozian."
50 POKE 752,N1:? :? :? ,"Good luck, D'Ta
an!":? :LQ=192
55 DIM P(18),C(18),HV$(48),HG$(48),HD$(1
6),L$(480),L1$(480),E$(60),D$(120),HN$(8
1),0$(418),NB$(168),OS$(22),V$(288)
57 DIM QQ$(10),S1$(32),0$(LQ),SP$(32),EX
$(32),A$(32),A1$(32),A2$(N3),A3$(32),A4$
(N3),X$(81),Y$(N3),Z$(N1),OX$(120)
58 L$(N1)=" ":L$(480)=" ":L$(N2)=L$:L1$=
L$:E$=L$:D$=L$:0$=L$:NB$=L$:SP$=L$:LL=32
:LNB=14:LQ=22:LE=N4:LD=8
60 HV$="TAKDROLIFLOOEXADPEUNLLOCCLOWEARE
MINSRAIPREKILSLE":Q$=L$:DIM AA$(LNB)
61 HG$="PORSTRFORAFTUP DOWOUTBUNSHUNOREA
SWESBULDOOCRAVES"
62 HD$="PSFAUDOBTNEWLRCU"
63 HN$="SHUDEVPOLCRAASBSPACONCYLTONBEZGR
AMACBOSQ01002003004KEYADCDISPILDOOBUTARO
SCRBUNSHE"
65 FOR I=N1 TO 15:READ S1$:L$(I*32-31,I*
32)=S1$:READ S1$:L1$(I*32-31,I*32)=S1$
70 READ S1$:E$(I*N4-N3,I*N4)=S1$:READ S1
$:D$(I*8-7,I*8)=S1$:NEXT I
72 FOR I=N1 TO 19:READ S1$:0$(I*22-21,I*
22)=S1$:READ A:P(I-N1)=A:READ A:C(I-N1)=
A:NEXT I
73 FOR I=N1 TO 12:READ S1$:NB$(I*14-13,I
*14)=S1$:NEXT I
75 PN=N1:JM=-N1:PV=N6:CY=143:PF=600:CD=N
2:DIM AT$(32):AT$="A THOUGHT IS FRAMED I
N YOUR MIND":ST=N1:PI=999:SF=N1
80 DATA IN THE CREW'S QUARTERS,LINED WIT
H BUNKS,DSB,7*1*14,IN THE RESEARCH LAB.
BY,BLUE BUTTON BY CLOSED BULKHEAD
81 DATA PF,0*6*2*,IN THE SHUTTLE BAY,BLU
E BUTTON ON WALL,P,1*,IN A SHUTTLE.WITH
-THINK CONTROL- BUTTON.0,2*
82 DATA OUTSIDE THE HULL,OF THE VESPOZIA
N,U,2*,IN THE CAPTAIN'S CABIN,,0C,6*9*,I
N THE NAVIGATION AND,COMPUTER ROOM
83 DATA AFUP,1*7*105*,ON THE BRIDGE,,AU,
6*0*,ON YUSES FAR UNDER,A PURPLE SKY,TE,
3*13,AT VESPOZIAN'S FUEL CORE
84 DATA I CAN FEEL HEAT,S,105*,IN A META
L GANGWAY WITH A,DOOR,PD,9*6*1211,IN A S
UIT ROOM,,P,10,IN A SECRET CONTROL ROOM
85 DATA WITH DUPLICATE CONTROL,0,10,ON Y
USES FAR,UNDER AN INDIGO SKY,NEW,13138*,
IN MY BUNK - IT HAS CLEAN
86 DATA SHEETS & LARGE PILLOW,U,0*,AUTO-
SHUTTLE,2,-2,STRANGE DEVICE,1,2,*POLYPS*
,99,2,CRAWLWAY,99,-2,ASBESTOS SUIT
```

```
87 DATA 11,2,SPACE SUIT,11,2,METAL CONTA
INER,5,2,FUEL CYLINDER,9,2,INSULATED TON
65,1,2,CAP'N BEZEL,5,-2,GRAKTA,6,-2
88 DATA MACHEN,7,-2,DISK 005,66,2,DISK 0
01,1,2,DISK 002,7,2,DISK 003,5,2,DISK 00
4,6,2,KEY,12,2,GLOWING ROCK,99,-2
89 DATA FUNUS,LITTLE FUNUS,GYRATES,ROTH,
BILGEN,GREATER BILGEN,OUTER FUNUS,FAR FU
NUS,YUSES FAR,MID YUSES,YUSES NEAR
90 DATA YUSES
100 ? ,"   Press any key ":GET #N1,J:? "
)":POKE 752,N:POKE 82,N4:GOTO 1600
1000 IF S1$(SG,SG)=" " THEN SG=SG-N1:S1$
=S1$(N1,SG):GOTO 1000
1010 RETURN
1100 SG=LNB:S1$=NB$(SG2*LNB+N1,SG2*LNB+L
NB):GOSUB 1000:RETURN
1600 Q$(Q2A,Q2B)="COMPUTER & VIDEO GAMES
":Q$(97,128)="WELCOMES YOU TO THE":Q$(12
9,160)="SEVENTH EMPIRE"
1800 IF PN=N5 AND PL=9 THEN RT=N5:GOTO 1
900
1810 IF PN<>N5 THEN RT=N
1900 SF=N:IF P(7)=9 OR (P(N6)=9 AND C(N6
)>N2) THEN SF=N1
2000 IF PV=N3 AND P(N2)=99 THEN P(N2)=N4
2100 IF PN=N2 AND C(N)=N4 AND C(N4)<>N5
 THEN GOSUB 19000:GOTO 22500
2200 IF C(N6)=N3 AND P(N6)=9 THEN C(N6)=
N4:PF=PF+2000:Q$(97,128)="NEW FUEL LOADE
D"
2300 CT=CT+N1:IF ST<>N1 THEN 2400
2310 JE=JE+N1:IF JE<25 THEN 2400
2320 JE=JE-25:PV=PV+JM:? "}"
2330 IF PV=CD THEN ST=N2:PF=PF-100:? "VE
SPOZIAN ORBITING ";NB$(PV*LNB+N1,PV*LNB+
LNB):GOTO 2390
2340 ? "VESPOZIAN PASSING ";NB$(PV*LNB+N
1,PV*LNB+LNB)
2390 GOSUB 18900
2400 IF RT=N5 THEN P(9)=99:P(10)=N6:GOTO
 2500
2410 IF PN=N5 AND RT=N THEN P(9)=N5:P(10
)=N5
2500 IF CT>200 THEN CT=N1:CY=CY+N1
2600 IF CD=PV THEN ST=N2
2700 OD$="BEARING ON":IF ST=N2 THEN OD$=
"ORBITING"
2800 IF PN=9 AND C(N4)<>N4 THEN 22100
2900 IF PV=N2 AND PN=N4 AND P(12)=99 THE
N P(12)=N4
3000 IF P(N2)=13 THEN P(N2)=88:PI=CY:Q$(
97,128)="POLYPS VANISH INTO THE ROCKS"
3100 IF CY>PI+19 THEN P(18)=13:PI=CY
3200 IF P(N1)=PN AND (PN=88 OR PN=13) AN
D (P(18)<>13 OR P(N6)<>13) THEN 3220
3210 GOTO 3300
3220 Q$(97,128)="SWITCH STARTS MOTOR. DR
ILL":Q$(129,160)="ENGAGES AND SPRAYS DUS
T!"
3300 IF P(18)=13 AND P(N1)=13 AND P(N6)=
13 AND C(N6)=N2 THEN 3320
3310 GOTO 3400
3320 P(18)=88:O$(N6*LO+N1,N6*LO+LO)="FUE
L CONTAINER":C(N6)=N3:Q$(97,128)="SWITCH
 STARTS MOTOR. DRILL"
3330 Q$(129,160)="ENGAGES AND FILLS CONT
AINER"
3400 IF P(17)=55 THEN C(N3)=N3
3500 IF C(N4)>N3 AND (PN=N1 OR PN=N6 OR
PN=7 OR PN=10) THEN IG=IG+N1:GOTO 3600
3510 IG=N
3600 IF IF>N THEN P(10)=PN:IF IG=N5 THEN
 GOSUB 19000:GOTO 22800
3700 IF P(10)=PN THEN IF INT(RND(N)*7)=N
3 THEN Q$(33,64)="EVER GET THE FEELING..
.?"
3900 IF P(N4)<>88 AND P(N4)<>PN AND P(N4
)<>55 AND P(N4)<>11 AND P(N4)<>66 THEN P
(N4)=88:GOTO 3990
3910 IF P(N5)<>PN AND P(N5)<>88 AND P(N5
)<>55 AND P(N5)<>11 AND P(N5)<>66 THEN P
(N5)=88:GOTO 3990
3920 GOTO 4100
3990 Q$(33,64)="STRANGE FEELING..."
4100 IF C(N3)=N2 AND P(17)<>55 AND P(17)
<>66 AND P(17)<>99 THEN 4120
4110 GOTO 4300
4120 P(17)=88:Q$(33,64)="STRANGE, SOMETH
ING SEEMS MISSING":C(17)=N3
4300 IF P(10)=N1 AND PN=N1 AND K1=14 THE
N GOSUB 19000:GOTO 22900
4400 IF PN=N6 OR PN=7 OR PN=10 OR PN=N1
THEN P(10)=88:IF INT(RND(N)*N3)=N2 THEN
P(10)=PN
4600 IF P(17)=55 AND PN<>11 AND PN<>10 A
ND C(17)>N2 THEN GOSUB 19000:GOTO 23100
4700 IF C(N)=N3 AND PN<>N1 AND PN<>N2 TH
EN GOSUB 19000:GOTO 23200
4800 EX$="":FOR I=N1 TO LE:SG=PN*LE+I
4900 IF E$(SG,SG)="P" THEN EX$(LEN(EX$)+
N1)="PORT. "
5000 IF E$(SG,SG)="S" THEN EX$(LEN(EX$)+
N1)="S'BOARD. "
5100 IF E$(SG,SG)="F" THEN EX$(LEN(EX$)+
N1)="FOR'D. "
5200 IF E$(SG,SG)="A" THEN EX$(LEN(EX$)+
N1)="AFT. "
5300 IF E$(SG,SG)="U" THEN EX$(LEN(EX$)+
N1)="UP. "
5400 IF E$(SG,SG)="D" THEN EX$(LEN(EX$)+
N1)="DOWN. "
5500 IF E$(SG,SG)="O" THEN EX$(LEN(EX$)+
N1)="OUT. "
5600 NEXT I
5700 II=N:S1$="VISIBLE: ":FOR I=N TO 18:
IF P(I)=PN THEN OS$=O$(I*LO+N1,I*LO+LO):
SG=LO:GOTO 5800
5710 GOTO 6000
5800 IF OS$(SG,SG)=" " THEN SG=SG-N1:OS$
=OS$(N1,SG):GOTO 5800
5810 IF LEN(S1$)+LEN(OS$)<29 THEN 5850
5820 IF LEN(S1$)<32 THEN S1$(LEN(S1$)+N1
)=" ":GOTO 5820
5830 V$(II*LL+N1,II*LL+LL)=S1$:II=II+N1:
S1$="":GOTO 5810
5850 S1$(LEN(S1$)+N1)=OS$:S1$(LEN(S1$)+N
1)=". ":V$(II*LL+N1,II*LL+LL)=S1$
6000 NEXT I:S1$=L$(PN*LL+N1,PN*LL+LL)
6001 SG=LEN(V$):IF SG<288 THEN V$(SG+N1)
=" ":V$(288)=" ":V$(SG+N2)=V$(SG+N1)
6002 IF S1$(LEN(S1$))=" " THEN S1$=S1$(N
1,LEN(S1$)-N1):GOTO 6002
6005 ? ">I AM ";S1$:? L1$(PN*LL+N1,PN*LL
+LL):?
6010 IF LEN(EX$)>N THEN ? "EXITS: ";EX$:
?
6100 IF V$(10,10)<>" " THEN ? V$(N1,32)
6200 FOR I=N1 TO 8:IF V$(I*LL+N1,I*LL+LL
)<>SP$ THEN ? V$(I*LL+N1,I*LL+LL)
6300 NEXT I
6400 ? :IF A$<>"" THEN ? "---->YOU SAID
";A$:?
6500 FOR I=N1 TO N5:IF Q$(I*LL+N1,I*LL+L
L)<>SP$ THEN ? Q$(I*LL+N1,I*LL+LL)
6600 NEXT I
6700 V$(N1)=" ":V$(288)=" ":V$(N2)=V$:?
:? "----> WHAT NOW";
6800 PL=PN:Q$(N1)=" ":Q$(LQ)=" ":Q$(N2)=
Q$:A$="":A1$="":A2$="":A3$="":A4$="":EX$
="":INPUT A$
6900 IF LEN(A$)<N3 THEN 19400
6910 A2$=A$(N1,N3)
7000 IF A2$="INV" THEN 8500
7010 IF A2$="HAI" THEN 9300
7020 IF A2$="QUI" THEN 9600
7030 IF A2$="HEL" THEN 9600
7040 IF A2$="SLE" THEN 18400
7100 J=N:FOR I=N1 TO LEN(A$):IF A$(I,I)=
" " THEN J=I:I=99
7200 NEXT I:IF J=N THEN 20500
7210 A1$=A$(N1,J-N1):A3$=A$(J+N1)
```

```
7220 IF LEN(A3$)>N3 THEN A3$=(LEN(A3$)+N1
)=" ":GOTO 7220
7300 A4$=A3$(N1,N3):IF A1$="GO" OR A2$="
GET" THEN 8100
7400 X$=HU$:Y$=A2$:GOSUB 18600:IF J=N TH
EN S1$="I DON'T KNOW HOW TO "+S1$(LEN(S1
$)+N1)=N1$:Q$(Q2A,Q2B)=S1$:GOTO 1800
7410 K1=(J-N1)/N3+N1
7500 X$=HN$:Y$=A4$:GOSUB 18600
7600 IF J=N THEN S1$="WHAT IS A "+S1$(LE
N(S1$)+N1)=A3$:S1$(LEN(S1$)+N1)="?":Q$(Q
2A,Q2B)=S1$:GOTO 1800
7700 K2=(J-N1)/N3
7900 ON K1 GOTO 8300,8600,9000,10100,101
00,11700,12000,12200,12400,12600,12800,1
3000,13300,14500,18200
8100 X$=HG$:Y$=A4$:GOSUB 18600:IF J=N TH
EN 19500
8110 X$=E$(PN*LE+N1,PN*LE+LE):S6=(J-N1)/
N3+N1:Y$=HD$(S6,S6):GOSUB 18600
8120 IF J=N THEN 19500
```

Luckily the first shot struck home

```
8130 DX$=D$:S62=PN*LD+N1+(J-N1)*N2:PN=VA
L(D$(S62,S62+N1)):D$=DX$:GOTO 19500
8300 IF K2=19 THEN 19700
8310 IF K2>18 THEN 19400
8320 IF P(K2)=55 THEN 19600
8330 IF P(K2)<>PN THEN 19500
8340 IF C(K2)<>-N1 THEN 19400
8350 IF C(K2)=-N1 THEN 20000
8360 IF P(9)=PN THEN 20400
8400 IF (K2=7 OR (K2=N6 AND C(N6)=N3)) A
ND P(8)<>55 THEN Q$(Q2A,Q2B)="TOO HOT TO
 HANDLE":GOTO 1800
8410 IF IN>N3 THEN Q$(Q2A,Q2B)="I'M OVER
LOADED ALREADY!":GOTO 1800
8420 IN=IN+N1:P(K2)=55:GOTO 19600
8600 IF K2>18 THEN 20100
8610 IF P(K2)<>55 THEN 20100
8620 IF K2=N1 AND (PN<>8 AND PN<>13) THE
N GOSUB 13000:GOTO 22600
8630 IN=IN-N1:IF PN=14 THEN P(K2)=66:Q$(
37,128)="SLIPPED IT UNDER PILLOW":GOTO 1
9600
8640 P(K2)=PN:GOTO 19600
```

```
8900 Q$(Q2A,Q2B)="I AM CARRYING: ":IF IN
=N THEN Q$(97,128)="NOTHING":GOTO 1800
8910 J=N2:S1$="I AM CARRYING: ":FOR I=N
TO 18
9000 IF P(I)=55 THEN 9050
9010 NEXT I:S6=LEN(Q$):IF S6<LQ THEN Q$(
S6+N1)=" ":Q$(LQ)=" ":Q$(S6+N2)=Q$(S6+N1
)
9020 GOTO 1800
9050 OS$=O$(I*LO+N1,I*LO+LO):S6=LO
9060 IF OS$(S6,S6)=" " THEN S6=S6-N1:OS$
=OS$(N1,S6):GOTO 9060
9070 IF LEN(S1$)+LEN(OS$)<29 THEN 9100
9080 IF LEN(S1$)<32 THEN S1$(LEN(S1$)+N1
)=" ":GOTO 9080
9090 Q$(J*LL+N1,J*LL+LL)=S1$:J=J+N1:IF J
=N6 THEN I=18:S1$="":GOTO 9010
9095 S1$="":GOTO 9070
9100 S1$(LEN(S1$)+N1)=OS$:S1$(LEN(S1$)+N
1)=". ":Q$(J*LL+N1,J*LL+LL)=S1$:GOTO 901
0
9300 CT=CT+15:IF ST=N1 THEN JE=JE+15
9400 GOTO 19600
9600 Q$(Q2A,Q2B)="ALWAYS LOOK AROUND AND
":Q$(97,128)="EXAMINE THINGS. TRY WORDS"
:Q$(129,160)="LIKE INSERT, LIFT, WAIT...
"
9610 GOTO 1800
9800 IF K2<>20 OR PN<>14 THEN 19400
9810 Q$(Q2A,Q2B)="NOTHING!":FOR I=N TO 1
8:IF P(I)=66 THEN P(I)=14:Q$(Q2A,Q2B)="I
T WAS STILL THERE!"
9900 NEXT I:GOTO 1800
10100 IF K2<>23 THEN 10400
10110 IF PN=7 THEN Q$(Q2A,Q2B)="I SEE BU
TTON MARKED":Q$(97,128)="-THINK CONTROL-
":GOTO 1800
10120 IF PN=10 AND E$(43,43)=" " THEN E$
(43,43)="L":Q$(Q2A,Q2B)="HOH!":GOTO 1014
0
10130 GOTO 10200
10140 S1$=L1$(10*LL+N1,10*LL+LL):S6=32
10150 IF S1$(LEN(S1$))=" " THEN S6=S6-N1
:S1$=S1$(N1,S6):GOTO 10150
10160 S1$(LEN(S1$)+N1)=" AND HIDDEN BULK
HEAD":L1$(10*LL+N1,10*LL+LL)=S1$:GOTO 18
00
10200 IF PN=9 AND E$(37,38)="S " THEN E$
(38,38)="C":P(N3)=9:Q$(Q2A,Q2B)="AHA!":G
OTO 1800
10210 IF PN=N6 THEN Q$(Q2A,Q2B)="COURSE
DATA ON SCREEN":GOTO 1800
10300 IF PN<>N2 THEN 10400
10310 IF C(N)=-N3 THEN Q$(97,128)="INNER
 DOOR OPEN":Q$(129,160)="OUTER DOOR CLOS
ED":GOTO 19600
10320 IF C(N)=-N4 THEN Q$(97,128)="INNER
 DOOR CLOSED":Q$(129,160)="OUTER DOOR OP
EN":GOTO 19600
10400 IF K2=19 THEN 19700
10410 IF K2<>N1 THEN 10500
10420 IF P(N1)<>55 AND P(N1)<>PN THEN 19
700
10430 Q$(Q2A,Q2B)="IT HAS HOLLOW CYLINDR
ICAL CUTTER":Q$(97,128)="AND SENSITIVE P
RESSURE SWITCH":GOTO 1800
10500 IF (PN=N1 OR PN=N2) AND K2=22 THEN
 Q$(Q2A,Q2B)="SIGN -AIRLOCK CONTROL-":GO
TO 1800
10600 IF K2<17 AND K2>11 THEN IF P(K2)<>
55 THEN 20100
10610 IF K2<17 AND K2>11 THEN ON K2-11 G
OTO 11100,11200,11300,11400,11500
10700 IF K2=20 AND PN=14 THEN Q$(97,128)
="LOOKS STRANGELY LUMPY...":GOTO 19600
10800 IF K2=24 AND PN=N6 THEN 20700
10900 Q$(97,128)="NOTHING SPECIAL":GOTO
19600
11100 Q$(Q2A,Q2B)="LABEL -YUSES-":GOTO 1
800
11200 Q$(Q2A,Q2B)="LABEL -POLYPS-":GOTO
1800
11300 Q$(Q2A,Q2B)="LABEL -FUNUS-":GOTO 1
```

```
800
11400 Q$(Q2A,Q2B)="LABEL -CONFIDENTIAL-"
:GOTO 1800
11500 Q$(Q2A,Q2B)="LABEL -BLOODLINE-":GO
TO 1800
11700 IF K2<>21 THEN 19400
11710 IF PN<>10 THEN 19900
11720 IF C(17)=N2 THEN Q$(Q2A,Q2B)="LOCK
ED!":GOTO 1800
11730 IF C(17)=N4 THEN Q$(Q2A,Q2B)="ALRE
ADY OPEN!":GOTO 1800
11740 IF P(7)=10 THEN 22000
11800 C(17)=N4:IF E$(43,43)=" " THEN E$(
43,43)="R":GOTO 19600
11810 E$(44,44)="R":GOTO 19600
12000 IF K2<>21 THEN 19400
12010 IF PN<>10 THEN 19900
12020 IF C(17)>>N2 THEN 20300
12030 IF P(17)<>55 THEN 20000
12040 C(17)=N3:GOTO 19600
12200 IF K2<>21 THEN 19400
12210 IF PN<>10 THEN 19900
12220 IF C(17)<>30 OR P(17)<>55 THEN 200
00
12230 C(17)=N2:GOTO 19600
12400 IF K2<>21 THEN 19400
12410 IF PN<>10 THEN 19900
12420 IF C(17)<>N4 THEN 20000
12430 C(17)=N3:E$(44,44)=" ":GOTO 19600
12600 IF K2<>N4 AND K2<>N5 THEN 19400
12610 IF P(K2)<>55 THEN 20100
12620 IF C(N4)=K2 THEN Q$(Q2A,Q2B)="WHAT
'S THIS I'M WEARING THEN?":GOTO 1800
12630 IF C(N4)>>N2 THEN S1$="WEARING ":S1
$(LEN(S1$)+N1)=O$(C(N4)*LO+N1,C(N4)*LO+L
O-7):Q$(Q2A,Q2B)=S1$:GOTO 1800
12640 C(N4)=K2:O$(K2*LO+LO-N6,K2*LO+LO)=
" (HORN)":GOTO 19600
12800 IF (K2<>N4 AND K2<>N5) OR C(N4)=N2
 THEN 20200
12810 C(N4)=N2:O$(K2*LO+LO-6,K2*LO+LO)="
        ":GOTO 19600
13000 IF K2=19 THEN 19700
13010 IF K2<12 OR K2>16 THEN 19400
13020 IF P(K2)<>55 THEN 20100
13030 IF PN<>N6 THEN Q$(65,96)="NO COMPU
TER TO TAKE IT":GOTO 1800
13100 IF P(10)=N6 AND K2>11 AND K2<17 TH
EN GOSUB 19000:GOTO 23000
13200 ? ")":S1$=O$(K2*LO+N1,K2*LO+LO):SG
=LO:GOSUB 1000
13220 ? S1$;" SPINS IN ITS DRIVE...":FOR
 I=N TO 100:NEXT I:? ")"
13230 ON K2-11 GOTO 13300,13500,13700,13
900,14100
13300 ? "-USES SYSTEM-":? "STAR SYSTEM
ADJACENT":? "TO FUNUS. HAS 3 PLANETS"
13310 SG=10:GOSUB 1100
13320 ? S1$;" - BALL OF FIRE":SG=9:GOSU
B 1100
13330 ? S1$;"  - INHABITED BY MINING":?
"                COLONY, NO FINDS"
13400 SG=8:GOSUB 1100:? S1$;"  - REMOTE
 DEAD PLANET":GOTO 14300
13500 ? "-POLYPS-":? "FREQUENT GALAXY IN
 MILLIONS":? "AROUND ENERGY-RICH PLANETS
."
13510 ? "REGENERATE EVERY 20 YEARS.":? "
ACTIVE POLYPS CAN TURN DEAD":? "PLANET I
NTO GREENHOUSE-EFFECT"
13520 ? "PLANET, RICH IN STELLAR ENERGY"
:? "AFTER 20 YEARS...":GOTO 14300
13700 ? "-FUNUS SYSTEM-":? "STAR WITH 7
PLANETS.":? "IN ORDER FROM FUNUS:-":SG=
N1:GOSUB 1100
13710 ? S1$;" - (MOLTEN ROCK)":SG=N2:GO
SUB 1100:? S1$;"          - (UNINHABITED)":S
G=N3:GOSUB 1100
13720 ? S1$;"          - (GREENHOUSE-EFFE
CT)":SG=N4:GOSUB 1100:? S1$;"          - (
INHABITED)"
13800 SG=N5:GOSUB 1100:? S1$:SG=N6:GOS
UB 1100:? S1$;"  - (ICY WASTE)":SG=7:GO
SUB 1100:? S1$;"          - (LUMP OF ROCK)"
13810 GOTO 14300
13900 ? "-CAPTAIN'S LOG-":? "BEARING TO
DOCK WITH BLOODLINE":? "STARGATE IN GYRA
TES ORBIT."
13910 ? "MISSION ACCOMPLISHED - D'TARN'S
":? "EXPERIMENTS CONFIRM POLYP":? "THEOR
Y. PITY BLOODLINE WILL"
13920 ? "BENEFIT!":? "GLAD TO GET SHOT O
F THIS":? "CREW! SUSPECT GRAKTA IS":? "B
LOODLINE SPY. MACHEN,"
13930 ? "THE TIAITHEN LIZARD GIVES ME":?
 "THE CREEPS. CAN'T GET RID OF":? "HIM -
 ONLY PILOT ABOARD!":GOTO 14300
14100 ? "-BLOODLINE-":? "TYRANNICAL EMPI
RE KEEPING":? "CONTROL ON ENERGY SUPPLIE
S":? "FROM GREENHOUSE-PLANETS -"
14200 ? "ON WHICH INTERSTELLAR TRAVEL":?
 "DEPENDS.":? "STARGATE IN FUNUS SYSTEM"
14210 ? "CAN SUMMON CRUISERS TO":? "QUEL
L REBELS."
14300 ? :? "PRESS ANY KEY TO CONTINUE...
":GET #N1,SG:Q$(Q2A,Q2B)="YOU REMOVE THE
 DISK...":GOTO 1800
14500 IF K2<>22 THEN 19600
14600 IF PN=7 THEN IF P(10)=7 THEN 22000
14610 IF PN=7 THEN Q$(Q2A,Q2B)="MACHEN,
THE LIZARD PILOT":Q$(97,128)="RESTRAINS
YOU":GOTO 1800
14700 IF PN<>12 THEN 16500
14710 IF PF<N1 THEN 22200
14720 GOSUB 18800
14800 ? "HEADING, CRYOGEN, LASER OR END"
14900 GET #N1,S6:Z$=CHR$(S6):IF Z$="H" T
HEN 15100
14910 IF Z$="C" THEN 15600
14920 IF Z$="L" THEN 15000
14930 IF Z$="E" THEN 19600
14940 GOTO 14900
15100 J=99:GOSUB 18800:? "CURRENTLY ";OD
$;": ";NB$(CD*LNB+N1,CD*LNB+LNB):? "NEW
DESTINATION";
15110 INPUT AA$:IF LEN(AA$)>=N THEN 15110
15120 IF LEN(AA$)<LNB THEN AA$(LEN(AA$)+
N1)=" ":GOTO 15120
15130 FOR I=N TO 11:IF AA$=NB$(I*LNB+N1,
I*LNB+LNB) THEN J=I
15200 NEXT I:IF J=99 THEN ? :? AA$;" NOT
 ON DATABASE":FOR I=N TO 100:NEXT I:GOTO
 14700
15300 IF J=CD THEN 14700
15310 JM=-N1:IF J>PV THEN JM=N1
15400 ST=N1:JE=N:CD=J:PF=PF-100:? :? "CO
URSE CORRECTION APPLIED"
15410 ? "NEW BEARING: ";NB$(CD*LNB+N1,CD
*LNB+LNB):? "FUEL:          ";PF;" PICAROTH
":GOSUB 18900:IF PF<N1 THEN 22200
15420 GOTO 14700
15600 GOSUB 18800:? :? "CRYOGENIC CONTRO
L":? "ENERGY TO FREEZE CREW - 10 PR/CY":
? "HOW MANY CLONE-YEARS FREEZE";
15610 TRAP 15610:INPUT SG:TRAP 40000
15620 IF SG*10>PF THEN ? "FUEL DEFICIENC
Y.":? "INTERLOCK OVERRIDE":GOTO 19200
15700 PF=PF-10*SG:CY=CY+SG:? "STAND BY":
GOSUB 18900:GOSUB 19000:PN=14:O$(Q2A,Q2B
)="YAHN...!":GOTO 1800
15800 GOSUB 18800:? "LASER CONTROL":?
15900 ? "TARGET ===>";
15901 INPUT AA$:IF LEN(AA$)>=N THEN 15901
15902 IF AA$="STARGATE" THEN 16100
15905 IF LEN(AA$)<LNB THEN AA$(LEN(AA$)+
N1)=" ":GOTO 15905
15910 J=99:FOR I=N TO 11:IF NB$(I*LNB+N1
,I*LNB+LNB)=AA$ THEN J=I:I=11
15920 NEXT I
16000 IF J=99 THEN ? AA$;" NOT ON DATABA
SE":GOSUB 18900:GOTO 14700
16100 ? "TARGETED ON ";AA$:FOR I=N TO 20
```

```
0:NEXT I:IF PF<1000 THEN ? "FUEL BE
NCY":GOTO 16200
16110 IF J=PV OR (AA$="STARGATE" AND PV=
N2) THEN 16300
16120 ? AA$;" OUT OF RANGE"
16200 ? "COMPUTER OVERRIDE":GOTO 19200
16300 GOSUB 19000:FOR I=N TO 10:NEXT I:I
F AA$()"STARGATE" THEN 22300
16320 GOTO 22400
16500 IF PN=N1 THEN 17700
16600 IF PN=N2 THEN 17700
16610 IF PN()N3 THEN 19900
16700 GOSUB 18800:? "THINK 'DESTINATION'
 OR 'END'"
16705 INPUT AA$:IF LEN(AA$)=N THEN 16705
16710 IF AA$()"VESPOZIAN" THEN 16800
16760 IF P(N)=N2 THEN ? "SHUTTLE AT VESP
OZIAN":GOTO 19100
16770 ? "IN FLIGHT VESPOZIAN":GOSUB 1890
0:? "DOCKING":GOSUB 18900:P(N)=N2:D$(N3*
LD+N1,N3*LD+LD)="2*":GOTO 1800
16800 IF AA$(N1,N1)="E" THEN 19600
16900 IF LEN(AA$)<LNB THEN AA$(LEN(AA$)+
N1)=" ":GOTO 16900
16910 J=99:FOR I=N TO 11:IF AA$=NB$(I*LN
B+N1,I*LNB+LNB) THEN J=I
17000 NEXT I:IF J=99 THEN ? AA$;" NOT ON
 DATABASE":GOSUB 18900:GOTO 1800
17100 IF J()PV THEN ? AA$;" OUT OF RANGE
":GOSUB 18900:GOTO 1800
17200 IF ST=N1 THEN ? "VESPOZIAN NOT IN
";AA$;" ORBIT":GOTO 19100
17300 IF J<8 THEN ? "CONDITIONS ON ";AA
$:? "NOT SUITABLE FOR SHUTTLE":? "LANDIN
G":GOTO 19100
17400 IF C(N)()-N4 THEN ? "SHUTTLE BAY D
OORS CLOSED":GOSUB 18900:GOTO 19100
17500 ? "HEADING - ";AA$:GOSUB 18910:? "
LANDED ON ";AA$:P(N)=8:D$(N3*LD+N1,N3*LD
+LD)="8*":GOSUB 18910:GOTO 1800
17700 IF PN()N1 THEN 17800
17705 IF C(N)=-N2 THEN C(N)=-N3:L1$(LL+N
1,LL+LL)="BLUE BUTTON BY OPEN BULKHEAD
":E$(LE+N1,LE+LE)="PFL":GOTO 19600
17710 IF C(N)=-N3 THEN C(N)=-N2:L1$(LL+N
1,LL+LL)="BLUE BUTTON BY CLOSED BULKHEAD
":E$(LE+N1,LE+LE)="PF":GOTO 19600
17800 IF PN=N2 AND C(N)=-N3 THEN C(N)=-N
4:E$(N2*LE+N1,N2*LE+LE)="OT":D$(N2*LD+N1
,N3*LD)="4*3*":GOTO 17850
17810 GOTO 17900
17850 Q$(97,128)="INNER DOOR CLOSES":Q$(
129,160)="OUTER DOOR OPENS":GOTO 19600
17900 IF PN=N2 AND C(N)=-N4 THEN C(N)=-N
3:E$(N2*LE+N1,N3*LE)="TP":D$(N2*LD+N1,N3
*LD)="3*1*":GOTO 17950
17910 GOTO 19000
17950 Q$(97,128)="OUTER DOOR CLOSES":Q$(
129,160)="INNER DOOR OPENS":GOTO 19600
18200 Q$(Q2A,Q2B)="TOO RISKY!":GOTO 1800
18400 Q$(Q2A,Q2B)="I'M NOT TIRED!":GOTO
1800
18600 J=N:FOR I=N1 TO LEN(X$) STEP LEN(Y
$):IF Y$=X$(I,I+LEN(Y$)-N1) THEN J=I:I=L
EN(X$)
18610 NEXT I:RETURN
18800 ? ")";AT$:? :RETURN
18900 ? :? "press any key":GET #N1,S63:R
ETURN
18910 FOR SG=1 TO 100:NEXT SG:RETURN
19000 FOR I=N TO 250 STEP N5:POKE 710,I:
SOUND N,I,8,15:NEXT I:SOUND N,N,N,N:POKE
 710,148:? "}":RETURN
19100 ? "* OPERATION ABORTED *":GOSUB 18
900:GOTO 1800
19200 ? "* OPERATION ABORTED *":GOSUB 18
900:GOTO 14700
19400 Q$(Q2A,Q2B)="IMPOSSIBLE!":GOTO 180
0
19500 S1$="I CAN'T GO ":S1$(LEN(S1$)+N1)
=A3$:Q$(Q2A,Q2B)=S1$:GOTO 1800
19600 Q$(Q2A,Q2B)="OK":GOTO 1800
19700 Q$(Q2A,Q2B)="REFERENCE DISK BY ITS
 NUMBER":GOTO 1800
19800 Q$(Q2A,Q2B)="I'M ALREADY CARRYING
IT!":GOTO 1800
19900 Q$(Q2A,Q2B)="I DON'T SEE IT HERE":
GOTO 1800
20000 Q$(Q2A,Q2B)="I CAN'T - YET!":GOTO
1800
20100 Q$(Q2A,Q2B)="I'M NOT CARRYING IT!"
:GOTO 1800
20200 Q$(Q2A,Q2B)="YOU MUST BE JOKING!":
GOTO 1800
20300 Q$(Q2A,Q2B)="OK - NOTHING HAPPENS"
:GOTO 1800
20400 Q$(Q2A,Q2B)="CAP'N HINKS TO ME AND
":Q$(97,128)="GLANCES AT GRAKTA":GOTO 18
00
20500 Q$(Q2A,Q2B)="HUH?":GOTO 1800
20700 ? "}":? "CLONE YEAR:";CY;"   ZONET
IME:";CT:? "
20710 ? "VESPOZIAN ";OD$;" ";NB$(CD*LNB+
N1,CD*LNB+LNB):?
20720 IF ST=N1 THEN ? "
T+ABS(CD-PV)*25-JE                ETA: ";C
20800 ? "NEAREST BODY: ";NB$(PV*LNB+N1,P
V*LNB+LNB):IF PV=N2 THEN ? "  BLOODLINE
 STARGATE"
20900 ? "
? "          FUEL: ";PF;" PICAROTH";
          LASER: ";:IF PF<1000 THEN ? "I
NOPERATIVE":GOTO 21000
20910 ? "OPERATIVE"
21000 ? :? "
    ":? :? "
:? :? "          THINK CONTROL REPORTING"
                  > press any key <"
21010 GET #N1,I:GOTO 19600
22000 ? ")GRAKTA, BLOODLINE SPY, BLASTS"
:? "YOU WITH HIS LASER -":? "YOU ARE NOW
 A PILE OF YUSES DUST!":GOTO 23300
22100 ? ")AARGH...!":? "HENT INTO THE FU
EL CORE WITHOUT":? "PROTECTION - SEARING
 HEAT...":GOTO 23300
22200 ? ")WITH NO FUEL, THE VESPOZIAN":?
 "HEADERS AIMLESSLY OUT":? "OF CONTROL,
LOST IN SPACE...":GOTO 23300
22300 ? ")TOO CLOSE PROXIMITY":? "THE VE
SPOZIAN IS RIPPED APART":? "BY THE EXPLO
SION":GOTO 23300
22400 ? ")HHAM!":? "THE BLOODLINE STARGA
TE IS":? "VAPOURISED. YOU HAVE SUCCEEDED
 IN YOUR":? "MISSION! CONGRATULATIONS!"
22410 GOTO 23300
22500 ? ")INNER DOOR CLOSES":? "AIR EVAC
UATED":? "OUTER DOOR OPENS":? "NO SPACE
SUIT!":? "YOU PERISH, AND DRIFT OUT"
22510 ? "INTO SPACE...":GOTO 23300
22600 ? ")PRESSURE SWITCH OPERATES":? "D
RILL ENGAGES AND BORES THROUGH":? "CRAFT
.":IF C(N4)=N5 THEN 22650
22610 GOTO 22700
22650 ? "YOU DRIFT OFF INTO SPACE":? "AN
D PERISH WHEN YOUR":? "OXYGEN RUNS OUT":
GOTO 23300
22700 ? "YOU BURST APART WITH THE":? "DE
PRESSURISATION!":GOTO 23300
22800 ? ")WALKING AROUND IN A";O$(C(N4)*
LO+N1,C(N4)*LO+LO):? "HIGHLY SUSPICIOUS!
":? "GRAKTA, BLOODLINE SPY, SHOOTS YOU!"
22810 GOTO 23300
22900 ? ")GRAKTA, BLOODLINE SPY, SHOOTS"
:? "YOU FOR TREACHERY AGAINST":? "THE BL
OODLINE EMPIRE!":GOTO 23300
23000 ? ")GRAKTA VAPOURISES YOU ON":? "S
USPICION OF SPYING BY":? "RETRIEVING COM
PUTERISED DATA"
23010 ? "YOU PERISH...":GOTO 23300
23100 ? ")GRAKTA NOTICES SUIT ROOM DOOR"
:? "OPEN. FINDS KEY ON YOU AND":? "BLAST
S YOU TOWARDS FUNUS":GOTO 23300
23200 ? ")GRAKTA NOTICES SHUTTLE BAY":?
"DOOR OPEN, AND SUSPECTS":? "PLOT AGAINS
T BLOODLINE EMPIRE"
23210 ? "YOU ARE EJECTED IN THE":? "SHUT
TLE AND FOREVER LOST":? "IN SPACE!!"
23300 ? :? "YOUR ADVENTURE IS OVER":? "A
NOTHER GAME?":GET #N1,I:IF CHR$(I)="Y" T
HEN RUN
```

# Presentation on the D

## Taming the beast by Nat and Franklin

Giving your Dragon games a professional look are two of Salamander Software's top programmers.

Writing under the obscure title of Nat and Franklin are Peter Neale and one of Salamander's other programmers who wishes to remain anonymous.

Peter Neale is Texas-born and has been involved in computing since high school in the States, where he learnt most of skills by playing Star Trek on a remote teletype link to the University of Texas computer.

He arrived in England in 1974 to attend the University of Sussex and then spent four years as an IBM mainframe programmer, two years as an accounts programmer and two as a system programmer.

Finally he quit to set up Salamander Software with wife and friends in November 1982. He has a hand in designing most of the company's titles and was responsible for Dragon Trek and Wizard War.

Franklin claims to have been raised on Betelgeuse V but his Earthly programs include: Grand Prix, Starjammer, Gridrunner and Franklins Tomb. He is currently working on the sequels to Franklin's Tomb and the first will be called Lost in Space.

### Taming the Beast

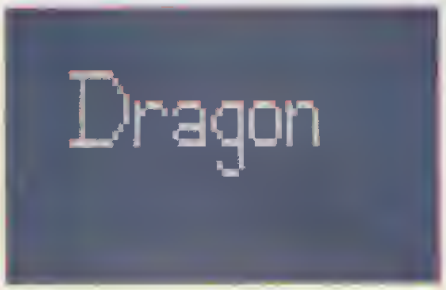
Having spent many hours in the high street Jungle, you finally managed to cage yourself a Dragon. But now that it's locked up in the back room, what do you do with it?

Feed it human sacrifices on the full moon? Not if you want to keep your friends.

Subject it to the whims of other Dragon Masters? This can provide hours of harmless amusement.

But what you really want to do is to become a Dragon Master yourself, learning to tame and control the majestic beast. There is only one way to do this. Start writing programs.

There is one thing that can turn a good game into a great game, presentation. A player's first impression of a game is based almost solely upon what he sees, and this will greatly influence the player's final




judgement.

A cluttered screen, badly presented with difficult to read-information, or boring graphics, can turn a player off, and he may grow to dislike what would otherwise be an excellent game.

The hardest and possibly most misunderstood aspect of presentation is printing. If you bought a book you wouldn't expect to find words split haphazardly, crooked margins and spelling mistakes.

Neatness does, after all, count. When you are planning your program, lay all the text out on a print grid like the one in the Dragon manual. Centre the text in the middle of each line or insert extra spaces to make the margins even. It takes more time, but the results are worth it.

To further improve the appearance of your text, try printing everything in a greenbox on a coloured background. This technique is particularly effective. When printing columns of numbers, use the PRINT@ and the PRINT USING so the text is printed exactly where you want it. Using the semi-colon (";") in your PRINT statements allows you to print on any line without destroying the rest of the line. Use all these techniques together and you will find that your program will begin to take on a professional appearance.

It can be very useful to POKE characters directly onto the screen instead of printing (the text screen is located between addresses 1024 and 1535). Sample program 1 shows you how you can get the complete ASCII characters set inverse video. The inverted alphabet is available normally by pressing Shift and @. Other characters (e.g. & and %) can only be inverted by POKEing the correct values directly onto the screen. A particularly useful location is 1535, the last screen position. If you print a character at this location, the screen will automatically scroll up, but if you POKE the character in, you can avoid this.

The low resolution graphics on the

```
10 CLS3
20 FOR I=12 TO 51 : RESET(I,2) : RESET(I,17) : NEXT I
30 FOR I=2 TO 17 : RESET(12,I) : RESET(51,I) : NEXT I
40 FOR I=13 TO 50 : SET(I,3,5) : SET(I,16,5) : NEXT I
50 FOR I=3 TO 16 : SET(13,I,5) : SET(50,I,5) : NEXT I
60 GOSUB260
70 PRINT@78,"MENU";
80 PRINT@135,"PRESS 1 FOR POKE";
90 PRINT@167,"PRESS 2 FOR PRINT";
100 PRINT@199,"PRESS 3 FOR QUIT";
110 A$=INKEY$
120 IF A$="3" THEN CLS:END
130 IF A$="2" THEN B$="PRINT" : GOTO160
140 IF A$="1" THEN B$="POKE" : GOTO160
150 GOTO110
160 GOSUB260
170 PRINT@105,B$;" EXAMPLES";
180 FOR I=0 TO 255
190 PRINT@423,USING"ASCII VALUE £££";I;
200 IF A$="1" THEN POKE1465,I ELSE PRINT@441,CHR$(I);STRING$(8,CHR$(175));
210 PRINT@201,"PRESS ANY KEY";
220 B$=INKEY$
230 IFB$="" THEN 220
240 NEXTI
250 GOTO10
260 FOR I=71 TO 261 STEP 32 : PRINT@I,STRING$(18," "); : NEXT I
270 RETURN
```

# DRAGON

```
0 CLS0
0 READ A,B
0 IF A=99 THEN 70
0 FOR I=1 TO 10 : NEXTI
0 GOTO20
0 A$=INKEY$
0 IF A$="" THEN 70
0 CLS
0 END
0 DATA8,5,8,6,8,7,8,8,8,9,8,10,8,11,8,12,6,4,7,4,8,4,9,4,10,4,11,4,12,4,13,4,14,5,15,6,16,7,16
,16,9,16,10,15,11,14,12,13,13,12,13,11,13,10,13,9,13,8,13,7,13,6,13
0 DATA18,8,18,9,18,10,18,11,18,12,18,13,19,9,20,8,21,8,22,8,23,9,25,9,26,8,27,8,28,8,29,8,30,9
0,10,30,11,30,12,30,13,29,13,28,13,27,13,26,13,25,12,26,11,27,11,28,11,29,11,36,8,35,8,34,8,33
,32,10,32,11,33,12,34,13,35,13,36,13,37,8,37,9
0 DATA37,10,37,11,37,12,37,13,37,14,37,15,37,16,36,17,35,17,34,17,33,16,40,8,41,8,42,8,43,8,44
,44,10,44,11,44,12,43,13,42,13,41,13,40,13,39,12,39,11,39,10,39,9,46,8,46,9,46,10,46,11,46,12,
,13,47,9,48,8,49,8,50,8,51,9,51,10,51,11,51,12,51,13,99,99
```

gon tend to be vastly under-rated and generally pooh-poohed by people. Don't make the same mistake. The great advantage of the low-res graphics is that you can get all nine colours and text on the same screen. Using the low-res graphics, you can put borders around text (as in Sample program 1), put simple animation in instructions (always a winner), or they can be used to great effect in title pages. Sample program 2 is an example of the latter, where the X and Y co-ordinates, which are to be set on, are stored in DATA statements. As each position is set on, the impression of writing is given.

There's one thing to be careful of when using the low-res graphics, each character position is divided into four pixels. Within one character position, you can have only *one* colour and black, so be sure to plan well in advance.

```
10 SP$="R20F6G6L20U12H4R6F4BD12G4L6E4"
20 PMODE1,1
30 PCLS3
40 SCREEN1,0
50 FOR X=10 TO 100 STEP 4
60 A$="BM"+STR$(X)+",40C3"+SP$
70 B$="BM"+STR$(X+4)+",40C2"+SP$
80 DRAWA$
90 DRAWB$
100 PLAY"T255L25505A"
110 NEXT X
120 DRAW"BM110,192C4U140"
130 FOR X=1 TO 10 : NEXT X
140 DRAW"C3D140"
150 COLOR4,3
160 FOR R=2 TO 36 STEP 2
170 CIRCLE(110,52),R
180 NEXTR
190 COLOR3,3
200 FOR R=2 TO 36 STEP 2
210 CIRCLE(110,52),R
220 NEXTR
230 GOTO230
```

High resolution graphics are a different kettle of fish indeed. The number of different ways of displaying anything on the hi-res screens could fill a book. The best way to fully appreciate the hi-res graphics is to sit down and try different things out. The DRAW command is especially powerful. By setting up a few DRAW strings at the beginning of your program you can very easily create animation effects. The only thing to be wary of is DRAWing off the edge of the screen, as this will distort your picture. Sample program 3 illustrates both the DRAW command, and the effects you can get using FOR/NEXT loops. The expanding CIRCLE used for the explosion could be easily changed to look like an approaching tunnel or planet.

Treat your Dragon with respect and it will be a true and loyal friend.

**Notes on sample 1**

Lines 10 — Clear screen
20-50 — Draw box on text screen
60 — Fill box subroutine
70-100 — Print menu choices
110-150 — Wait for option to be selected
160 — Fill box
180-250 — Put character to screen and wait for key press, then put another character on etc.
260-270 — Subroutine to fill box with green.

**Notes on sample 2**

Lines 10 — Clear screen
20-60 — Read Data and set points
70-100 — Wait for key press for end
110-130 — Data. Format is X co-ordinate, Y co-ordinate etc.
Value of 99 for X means end of data.

Notes on sample 3

Lines 10 — DRAW string for spaceship
20-40 — Set up Hi-Res screen
50-110 — Move spaceship across screen
120-140 — Draw fire line to ship
150-220 — Draw explosion

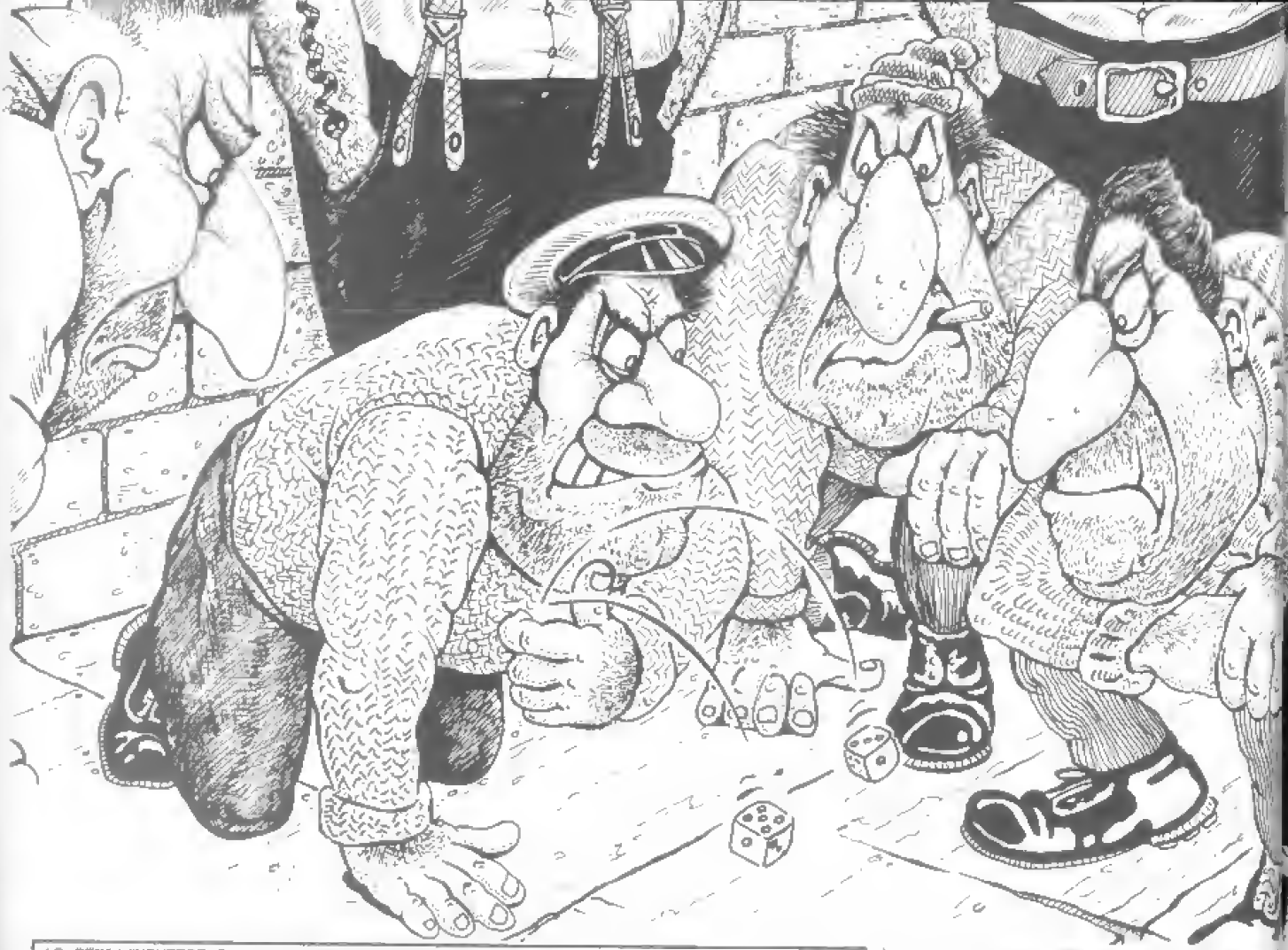


ILLUSTRATION BORIAN CROSS

```
10 REM***YAHTZEE BY MARK KERSHAW FOR THE DRAGON 32 (C)83
20 DIM NAME$(20),SC(20,13),TTAL(20),R(20,20),S(20,20)
30 CLS0:PRINT@225,"IF INSTRUCTIONS ARE REQUIRED", PRINT@261,"PRESS Y (ELSE ANY K
EY)",
40 A$=INKEY$ IF A$="" THEN 40
45 IF A$="Y" THEN GOSUB 2230
50 CLS0 INPUT"HOW MANY TO PLAY",NO
60 IF NO=0 OR NO>20 THEN 50
70 FOR X=1 TO NO
80 CLS0:INPUT"GIVE YOUR NAMES",NAME$(X)
85 IF LEN(NAME$(X))>7THEN CLS0 PRINT"TOO MANY LETTERS, AGAIN PLEASE!" FOR Z=1 TO
1000 NEXTZ GOTO80
90 NEXT X
100 FOR GI=1 TO 13
101 FOR C=1 TO NO
110 CLS4 FOR X=1 TO 100:PRINT@230,NAME$(C),"'S GO" NEXTX
120 FOR X=1 TO 500 NEXT
125 P(1)=1 P(2)=1:P(3)=1 P(4)=1 P(5)=1
130 FOR AT=1 TO 3
150 FOR I=1 TO 5
160 IF P(X)=1 THEN D(X)=RND(6) ELSE 190
170 ON D( ) GOSUB 2300,2330 2340,2360,2380 2400
180 NE,T
190 PCM#DRAW PDRPC
192 PMODE 4,1 SCREEN1,1 PCLS
193 DRAW"BM25BM10,10U2D4UCL2R4BM0,0E2L2D2R4,BM2 BL2R2D2BR2"
194 GET(0,0)-(20,20),B,G GET(0,100)-(20,120),W,G
195 PCLS0 COLOR 5,0
200 PUT (-10*(-5*B-10*20),0),B,PSET IF D(I)=1 THEN DRAW"BM"+STR$(10+I*20)+",50"+DICE$(1)
RAW"BM"+STR$(3+I*20)+",50"+DICE$(1)
210 IF D(I)=2 THEN DRAW"BM"+STR$(10+I*20)+",50"+DICE$(2) ELSE DRAW"BM"+STR$(3+I*20)+",50"+DICE$(2)
220 IF D(I)=3 THEN DRAW"BM"+STR$(10+I*20)+",50"+DICE$(3) ELSE DRAW"BM"+STR$(3+I*20)+",50"+DICE$(3)
230 IF D(I)=4 THEN DRAW"BM"+STR$(10+I*20)+",50"+DICE$(4) ELSE DRAW"BM"+STR$(3+I*20)+",50"+DICE$(4)
231 A=PEEK(&FF00)
240 IF A=254 OR A=126 THEN SOUND100,2 GOTO200
241 IF D(I)=5 THEN DRAW"BM"+STR$(10+I*20)+",50"+DICE$(5) ELSE DRAW"BM"+STR$(3+I*20)+",50"+DICE$(5)
250 DRAW"BM0,160 R100D20BM+STR$(-100)+",0 R100D20BM+STR$(-100)+",0 R100D20BM+STR$(-100)+",0
```

```
271 J=J*9 JJ=JJ*4
272 IF JJ<36 THEN JJ=60
273 IF JJ>168 THEN JJ=168
274 IF J>=234 THEN J=234
280 PUT(J,JJ)-(J+20,JJ+20),R,PSET
281 P=PEEK(65280)
290 IF P=254 OR P=126 THEN SOUND 150,2 GOTO300 ELSE 280
300 REM*CHECK JOYSTICK POSITIONS
310 IF J<18 AND J>=0 AND JJ<100 AND JJ>=76 THEN D(C,1)=0 PCLS
320 IF J<72 AND J>=45 AND JJ>=76 AND JJ<100 THEN D(C,2)=0 PCLS
330 IF J<117 AND J>=99 AND JJ<100 AND JJ>=76 THEN D(C,3)=0 PCLS
340 IF J<171 AND J>=144 AND JJ>=76 AND JJ<100 THEN D(C,4)=0 PCLS
350 IF J>=216 AND J<198 AND JJ>=76 AND JJ<100 THEN D(C,5)=0 PCLS
360 IF JJ<100 AND JJ>=152 THEN 390
370 IF J<144 AND JJ>=152 THEN 390
371 GOTO 280
380 NEXT AT
390 REM*SCORES
400 FOR X=1 TO 1000 NEXT X SOUND 20,2
500 CLS
510 PRINT@0,"PLAYER'S NAME " NAME$(C)
520 PRINT@22,"SCORE " TTAL(C)
530 FOR X=32 TO 63 PRINT@X CHR$(143)+96 NEXT
540 PRINT@66,"ONES (ADD ALL THE ONES)" IF SC(C,1)=1 THEN PRINT@94,"U"
555 PRINT@98,"TWOS (ADD ALL THE TWOS)" IF SC(C,2)=1 THEN PRINT@96,"U"
556 PRINT@130,"THREES  ADD ALL THE THREES)" IF SC(C,3)=1 THEN PRINT@128,"U"
557 PRINT@162,"FOURS (ADD ALL THE FOURS)" IF SC(C,4)=1 THEN PRINT@160,"U"
558 PRINT@194,"FIVES (ADD ALL THE FIVES)" IF SC(C,5)=1 THEN PRINT@192,"U"
559 PRINT@226,"SIXES (ADD ALL THE SIXES)" IF SC(C,6)=1 THEN PRINT@224,"U"
560 PRINT@258,"THREE OF A KIND(ALL THE DICE)" IF SC(C,7)=1 THEN PRINT@256,"U"
561 PRINT@290 "FOUR OF A KIND(ALL THE DICE)" IF SC(C,8)=1 THEN PRINT@288,"U"
562 PRINT@322,"FULL HOUSE (SCORE 25)" IF SC(C,9)=1 THEN PRINT@320,"U"
563 PRINT@354,"LOW STRAIGHT (SCORE 30)" IF SC(C,10)=1 THEN PRINT@352,"U"
564 PRINT@386,"HIGH STRAIGHT (SCORE 40)" IF SC(C,11)=1 THEN PRINT@384,"U"
565 PRINT@418,"YAHTZEE (SCORE 50)" IF SC(C,12)=1 THEN PRINT@416,"U"
566 PRINT@450,"CHANCE (ADD ALL THE DICE)" IF SC(C,13)=1 THEN PRINT@448,"U"
570 J=JOYSTK(0) JJ=JOYSTK(1)
571 JJ=INT(JJ/4) IF JJ=15 THEN JJ=14 ELSE IF JJ<2 THEN JJ=2
572 PRINT@JJ*32 +1,"£"
573 PRINT@JJ*32+30,"]"
574 P=PEEK(65280)
580 IF P=254 OR P=126 THEN SOUND 190,2 GOTO600 ELSE PRINT@JJ*32+1,CHR$(143) PRIN
T@JJ*32+30,CHR$(143) GOTO540
600 IF JJ=2 THEN CH=1
610 IF JJ=3 THEN CH=2
620 IF JJ=4 THEN CH=3
630 IF JJ=5 THEN CH=4
640 IF JJ=6 THEN CH=5
650 IF JJ=7 THEN CH=6
660 IF JJ=8 THEN CH=7
670 IF JJ=9 THEN CH=8
680 IF JJ=10 THEN CH=9
690 IF JJ=11 THEN CH=10
```

BY MARK KERSHAW

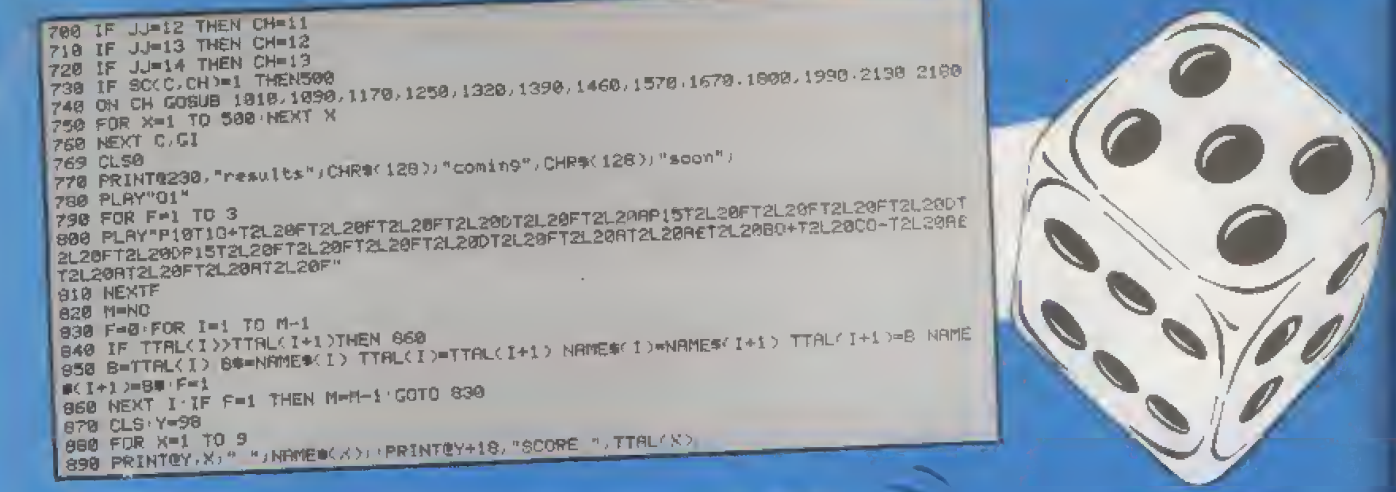
# YAHTZEE

**Runs on a Dragon 32 in 9K with one joystick**

**tially and any, all or none of the dice may be thrown or saved on subsequent throws. Up to three throws are allowed to achieve any desired combination. One problem in computerising Yahtzee is the number of inputs needed for saving, throwing and deciding which combination to choose. It would be easier in most cases to just throw the dice and forget the computer! The author has got round the problem beautifully by utilising the right joystick as cursor control. This clever trick has enabled hi-res displays of the dice and very easy inputs. All instructions are included.**

**Variables.**
**D(1)-D(5): array to store dice.**
**P(1)-P(5): array to save disc.**
**SC (C, CH): array to determine whether a player, C, has used a certain option, CH.**
**Name S (C): array to store names of players.**
**TTAI (C): array to store scores of each player.**

```
700 IF JJ=12 THEN CH=11
710 IF JJ=13 THEN CH=12
720 IF JJ=14 THEN CH=13
730 IF SC(C,CH)=1 THEN500
740 ON CH GOSUB 1010,1090,1170,1250,1320,1390,1460,1570,1670,1800,1990,2130 2180
750 FOR X=1 TO 500:NEXT X
760 NEXT C,GI
769 CLS0
770 PRINT@230,"results";CHR$(128);"coming";CHR$(128);"soon";
780 PLAY"O1"
790 FOR F=1 TO 3
800 PLAY"P10T10+T2L20FT2L20FT2L20FT2L20DT2L20FT2L20AP15T2L20FT2L20FT2L20FT2L20DT
2L20FT2L20DP15T2L20FT2L20FT2L20FT2L20DT2L20FT2L20AT2L20AET2L20BO+T2L20CO-T2L20AE
T2L20AT2L20FT2L20AT2L20F"
810 NEXTF
820 M=NO
830 F=0:FOR I=1 TO M-1
840 IF TTAL(I)>TTAL(I+1)THEN 860
850 B=TTAL(I):B$=NAME$(I):TTAL(I)=TTAL(I+1):NAME$(I)=NAME$(I+1):TTAL(I+1)=B:NAME
$(I+1)=B$:F=1
860 NEXT I:IF F=1 THEN M=M-1:GOTO 830
870 CLS:Y=98
880 FOR X=1 TO 9
890 PRINT@Y,X;" ";NAME$(X);:PRINT@Y+18,"SCORE ";TTAL(X)
900 Y=Y+32
910 NEXT X
920 PRINT@484,"PRESS Y FOR ANOTHER GO"
930 SCREEN 0,1
940 A$=INKEY$:IF A$<>"Y" THEN 940
950 RUN
960 END
1000 REM*SUBROUTINES
1010 CO=1
1020 FOR X=1 TO 5
1030 IF D(X)=CO THEN TTAL=TTAL+1
1040 NEXT X
1050 TTAL(C)=TTAL(C)+TTAL
1060 SC(C,1)=1
1070 TTAL=0
1080 RETURN
1090 CO=2
1100 FOR X=1 TO 5
1110 IF D(X)=CO THEN TTAL=TTAL+2
1120 NEXT X
1130 TTAL(C)=TTAL(C)+TTAL
1140 SC(C,2)=1
1150 TTAL=0
1160 RETURN
1170 CO=3
1180 FOR X=1 TO 5
1190 IF D(X)=CO THEN TTAL=TTAL+3
1200 NEXT X
1210 SC(C,3)=1
1230 TTAL(C)=TTAL(C)+TTAL
1235 TTAL=0
1240 RETURN
1250 CO=4
1260 FOR X=1 TO 5
1270 IF D(X)=CO THEN TTAL=TTAL+4
1280 NEXT X
1290 SC(C,4)=1
1291 TTAL(C)=TTAL(C)+TTAL
1300 TTAL=0
1310 RETURN
1320 CO=5
1330 FOR X=1 TO 5
1340 IF D(X)=CO THEN TTAL=TTAL+5
1350 NEXT X
1360 SC(C,5)=1
1365 TTAL(C)=TTAL(C)+TTAL
1370 TTAL=0
1380 RETURN
1390 CO=6
1400 FOR X=1 TO 5
1410 IF D(X)=CO THEN TTAL=TTAL+6
1420 NEXT X
1425 TTAL(C)=TTAL(C)+TTAL
1430 SC(C,6)=1
1440 TTAL=0
1450 RETURN
1460 O=D(1):O1=D(2):O2=D(3):O4=0:O5=0:O6=0
1470 FOR X=1 TO 5
1480 IF D(X)=O THEN O4=O4+1
1490 IF D(X)=O1 THEN O5=O5+1
1500 IF D(X)=O2 THEN O6=O6+1
1510 NEXT X
1520 IF O4=3 OR O5=3 OR O6=3 THEN TTAL=D(1)+D(2)+D(3)+D(4)+D(5):ELSETTAL=
1530 TTAL(C)=TTAL(C)+TTAL
1540 TTAL=0
1550 SC(C,7)=1
1560 RETURN
1570 O=D(1):O2=D(5):O4=0:O5=0
1580 FOR X=1 TO 5
1590 IF D(X)=O THEN O4=O4+1
1600 IF D(X)=O2 THEN O5=O5+1
1610 NEXT X
1620 IF O4=4 OR O5=4 THEN TTAL=D(1)+D(2)+D(3)+D(4)+D(5):ELSE TTAL=0
```



```
1670 TTAL(C)=TTAL(C)+TTAL
1680 SC(C,F)=1
1690 TTAL=0
1700 RETURN
1710 COUNT=0
1720 FOR X=1 TO 5
1730 IF D(X)=ODER THEN ODER=D(X)
1740 NEXT X
1750 FOR X=1 TO 5
1760 IF D(X)=ODER THEN D(X)=0
1770 NEXT X
1780 COUNT=COUNT+1 IF COUNT=2 THEN 1750 ELSE ODER=0 GOTO1680
1790 IF D(1)=D(2) AND D(2)=D(3) AND D(4)=D(5) THEN TTAL=25 ELSE TTAL=0
1800 TTAL(C)=TTAL(C)+TTAL
1810 SC(C,9)=1
1820 TTAL=0
1830 RETURN
1840 CU=1:D=1
1850 G=D(1) E=D(2)
1860 FOR X=1 TO 5
1870 IF D(X)<G THEN G=D(X)
1880 IF D(X)>E THEN E=D(X)
1890 NEXTX
1900 FOR X=1 TO 5
1910 IF D(X)=G+CU THEN 1890
1920 NEXT GOTO1900
1930 CU=CU+1 IF CU=4 THEN 1940 ELSE 1860
1940 FOR X=1 TO 5
1950 IF D(X)=E-D THEN 1930
1960 NEXT X:TTAL=0 GOTO1950
1970 D=D+1 IF D=4 THEN 1940 ELSE 1900
1980 TTAL=30
1990 SC(C,10)=1
2000 TTAL(C)=TTAL(C)+TTAL
2010 TTAL=0:CU=0:D=0 E=0 G=0
2020 RETURN
2030 CU=1
2040 FOR X=1 TO 5
2050 G=D(1)
2060 IF D(X)<G THEN G=D(X)
2070 NEXT X
2080 FOR X=1 TO 5
2090 IF D(X)=G+CU THEN GOTO 2050
2100 NEXT X TTAL=0 GOTO2080
2110 CU=CU+1 IF CU=5 THEN 2070 ELSE 2030
2120 TTAL=40
2130 TTAL(C)=TTAL(C)+TTAL
2140 SC(C,11)=1
2150 TTAL=0
2160 CU=0 G=0
2170 RETURN
2180 IF D(1)=D(2) AND D(2)=D(3) AND D(3)=D(4) AND D(4)=D(5) THEN TTAL=50
     ELSE TT AL=0
2140 TTAL(C)=TTAL(C)+TTAL
2150 SC(C,12)=1
```

```
2160 TTAL=0
2170 RETURN
2180 TTAL=D(1)+D(2)+D(3)+D(4)+D(5)
2190 TTAL(C)=TTAL(C)+TTAL
2200 SC(C,13)=1
2210 TTAL=0
2220 RETURN
2230 REM*INSTRUCTIONS
2240 CLS PRINT"yahtzee IS AN ADAPTATION OF THE POPULAR BOARD GAME.IT DIFFERS VER
Y LITTLE FROM THE ORIGINAL"
2241 PRINT@484,"(PRESS ANY KEY TO CONTINUE)",
2242 *CREEN 0,1
2243 A$=INKEY$ IF A$="" THEN 2243
2245 CLS PRINT"THE IDEA OF THE GAME IS VERY LOGICAL.JUST MANOUEVRE THE JOYSTICK
INTO A SUITABLE POSITION AND PRESS THE FIRE BUTTON ,TO SAVE A DICE SIMPLY POSITI
ON THE JOYSTICKOVER THE DICE AND FIRE",
2246 PRINT@484,"(PRESS ANY KEY TO CONTINUE)",
2247 SCREEN 0,1
2248 A$=INKEY$ IF A$="" THEN 2248
2260 CLS:PRINT PRINT:PRINT"u-A USED COMBINATION" PRINT:PRINT"YAHTZEE-5 DICE ALL
SAME NUMBER":PRINT:PRINT"FULL HOUSE-3 AND 2 DICE THE SAME":PRINT"HIGH STAIGHT-AL
L ON A RUN" PRINT:PRINT"LOW STRAIGHT-4(OR MORE) ON A RUN"
2270 PRINT@484,"(PRESS ANY KEY TO CONTINUE)"
2280 SCREEN 0,1
2281 A$=INKEY$ IF A$="" THEN 2281
2290 RETURN
2300 DICE$(X)="BM-0,-0R0R14D14L14U13BM+6,+6R0R1G1R1"
2310 RETURN
2320 DICE$(X)="BM-0,-0R0R14D14L14U13BM+2,+5R0R1G1R1BM+6,-1R0R1G1R1"
2330 RETURN
2340 DICE$(X)="BM-0,-0R0R14D14L14U13BM+11,+1R0R1G1R1BM-5,+3R0R1G1R1BM-6,+4R0R1G1
R1"
2350 *ETURN
2360 DICE$(X)="BM-0,-0R0R14D14L14U13BM+2,+1R0R1G1R1BM+8,-1P0R1G1R1BM-10,+8R0R1G1
BM+8,-1R0P1G1R1"
2370 RETURN
2380 DICE$(X)="BM-0,-0R0R14D14L14U13BM+2,+1R0R1G1R1BM+8,-1P0R1G1R1BM-10,+8R0R1G1
1BM-5,+4P0R1G1R1BM+8,-1R0R1G1R1"
2390 RETURN
2400 DICE$(X)="BM-0,-0R0R14D14L14U13BM+2,+1P0R1G1R1BM+8,-1P0R1G1R1BM-6,+3R0R1G1R
R1BM+8,-1R0P1G1R1BM-10,+3R0R1G1R1BM+8,-1R0R1G1R1"
2410 RETURN
```

# BEAT IT

## Tips for tackling top games

by Eugene Lacey

It's a well known video gamers' maxim that the tough ones are best.

Whilst agreeing with this wholeheartedly there is always a time in every gamer's life when a little assistance, or hint, is more than welcome.

The *C&VG* review team have been busy over the last few months playing their way to the bitter end of some of the toughest games you can get for the popular video games systems.

Here are their reports, hints and tips for scoring highly on some of the toughest games around.

## PITFALL — FUN IN THE JUNGLE!

Pitfall was one of the smash hits of 1983 and voted Game of the Year at the Consumer Electronics Show — which is America's Chelsea Flower Show of video games, where all the major manufacturers show off their prize exhibits.

Pitfall Harry's Jungle Adventure takes you on a perilous search for the lost treasure of Enarc.

On your search you will encounter many dangers in the shape of crocodiles, snakes, scorpions, logs, and disappearing lakes.

You have just three lives and twenty minutes to locate all the Treasures of Enarc.

Control of Harry is simple. All you do is push the joystick in the direction you want him to move — right, left, or up and down the ladders that connect the two floors. Pressing the fire button makes Harry jump — which is the way he avoids obstacles.

The nasties have different strengths and some of them are easier to avoid than others. Generally — timing is the key to overcoming all of these obstacles, time your run and leap to the split second to get over them.

The other general tip is to keep a record of the screens that you visit, try to memorise them and note down all the obstacles that appear on each screen.

The first screen is easy, simply skip Harry across a stationary log and one hole and your are on your way to the next screen.

The first major hazard appears on screen three in the shape of a bog. Hop on to the vine — timing your leap carefully — and jump again as soon as you land on the far side of the bog to clear the log rolling towards you.

Toughest of all the jungle adversaries are the crocs. The only way to get across a croc infested lake is to use their heads as stepping stones. There are two ways to deal with the crocs — the slow safe way, and the fast risky way.

For the more cautious of you there is a safe spot at the back of each crocs head where you are out of reach of those snapping jaws.

Daredevils may wish to attempt the fast method — time your jump so that Harry's last footstep on land takes place just as the crocodiles mouths begin to close. If your timing is sharp enough you should be lable to clear all three crocs in three quick hops.

A couple of easy obstacles follow the crocodiles and it is not until screen seven that you come across your first piece of treasure.

To claim the gold bar you must successfully negotiate a disappearing bog. The secret of getting past this obstacle is to position Harry in the space between the second number and the colon on the timer. When the bog begins to disappear make a dash to the right. This strategy is the best one to adopt for all diasppearing bogs on other screens.

These tips if learnt thoroughly should enable you to deal with all the obstacles you encounter in the following screens.

For real speed in Pitfall you will have to learn when and where to use the underground tunnels. These take you through the jungle faster but be careful not to miss out on the treasure as well as the obstacles.

## QUEST FOR THE RINGS

Quest for the Rings represented a totally new concept in games when it was launched last year.

The first ever board game come video game all in one. The theme is very Tolkienesque with demons, dragons, hidden rings, and strange powers.

The idea of the game is to find the 10 rings that have been hidden by the Ringmaster. Two people can play as a team against the forces of evil or there is also a single player version of the game.

The video part of the game is basically a maze chase affair. The various screens for this action are selected by pressing the keys on the overlay giving you variously; The Dungeons, The Crystal Caverns, The Shifting Halls, and the Infernal Infernos.

Matching of partners is the key to success in the Quest. Pick partners that work well together, one to deal with the enemy, the other to dart in and grab the rings.

You can choose to be a Wizard, Phantom, Changeling or an Alien.

Each has different powers. The Warrior is armed with "Theor's Sword" which can slay adversaries that come at you on a horizontal plane only. The sword is useless if the creatures attack from above or below.

Wizards can cast spells which have the effect of temporarily immobilising enemies.

Phantoms can walk through walls and Changelings can become invisible altogether though both only move at half speed when in this state. Practising each of the four roles is the key to mastering Quest for the Rings, on the Philips G7000.

## BURGERTIME — FAST FOOD!

Of all the food games that have appeared since Pacman, Burgertime must surely be the best.

It's fast food at its quickest as you score points in an attempt to assemble four hamburgers before the peppers, eggs and sausages catch you.

Burgertime is a master strategy maze game. You have to plan your route very carefully. Unlike Pacman you cannot go on long sweeping runs gobbling dots — as in this game it's not just simple dots and slow ghosts that are out to get you. Those pickles are really mean and the only defence you have against them is a limited supply of pepper.

Extra pepper can be earned by catching the tankards of beer and cartons of french fries that appear periodically.

The secret of success in Burgertime is to get the pickles to follow you, position them under a burger, lettuce leaf or bun and then splat — drop the morsel on their heads and send it crushing to the ground.

One tip for dealing with fried eggs is to turn and walk away from them once they have been peppered — don't walk through the points that appear, as this will cause the eggs to reappear.

As you move your way up through the screens the layout of the burgers gets more complex and you will need to think even harder about the route to take.

One of the most dificult parts of Burgertime is learning to control the chef with the disc controller and it may pay off to spend an afternoon just steering the character around the screen to practice tight cornering.

Go — gorge yourself.

## RAIDERS OF THE LOST ARK

It's just too damn tough was many a gamers comment on Howard Warsaw's adaptation of the Stephen Spielberg blockbuster — *Raiders of the Lost Ark.*

The 13 screen of action with their assorted challenges had many of you stumped.

If you were one of those people, then help is at hand. But if you want the satisfaction of getting there for yourself then turn the page right now.

You are Indianna Jones — the hero of the game and film in search of the Lost Ark of the Covenant.

The game begins in the entrance room which shows you, a snake, and the famous whip. Pick up the snake and dash down screen to the market place before the snake gets you.

Once in the market place you must now assemble the items you will need for your adventure.

Items are picked up by moving Indy around the screen and simply touching the item you want. Get the magic flute first as this will give you immunity from the snakes. Also pick up a grenade, a key, and an eyepiece jewel.

Once these items are registered at the foot of the screen you are ready to enter the Temple of the Ancients. To do this you must blast a hole in the side of the entrance room with your grenade.

This needs to be a quick, clinical operation as once you have selected the grenade you have lost immunity from the snakes.

You will also have to remember to dart back to the market place before the explosion takes place otherwise you will be blown to bits as well.

Pick up the timepiece in the Temple of the Ancients and head straight for the Blue Room — also known as the Room of the Shining Light. You will now find yourself trapped in one of the cells at the bottom of this room. This is your first opportunity to select the whip and blast a hole — Breakout style — in the wall of the cell.

Once you have escaped make a dash to the right towards the Treasure Room. Items to pick up here are many and the Egyptian Ankh — persistence is required to win the latter as the Gods are reluctant to part with such a valuable item easily.

You shold now have in your possession the Ankh, two bags of money, the time piece, and the eyepiece. Go back to the Blue Room and get yourself trapped in one of the cells. Select the Ankh, press the button, and hey presto you are teleported to the Mesa Field.

From the Mesa you must find your way into the Map Room. The map will appear at the centre of the screen. Centre yourself on the map and move the selector dot to the timepiece and press the joystick fire button.

This will make the clock appear. Just before the hands of the clock are vertical select the eyepiece.

The sun will now flood in and if you look carefully through the eyepiece at the map you will be able to see a tiny flashing dot — in one of the mesas — this is the location of the Lost Ark of the Covenant.

So now you know where it is the next step is to go to the Black Market and buy a shovel which you will need for the dig.

Take the right exit from the Black Market and head for the Treasure Room — you will now need to recover the Ankh to take you back to the Mesa Field, and two more bags of money to buy a parachute.

Use the parachute to arrive in the Mesa — you are now very close to finding the Ark and to give you further help would only spoil the last most exciting scene of the game. Go to it Indy.

## CENTIPEDE — INSECT ATTACK!

Fun in a mushroom field can mean only one thing to video gamers — Centipede.

This arcade game caused a real wow in the arcades as it was the first game to demonstrate the full potential of trackball controllers.

The key to success in Centipede is to fire quickly and fire accurately.

Beware of low lying mushrooms as the Centipede moves down a row when it collides with a mushroom.

The secret is to clear just the right number of mushrooms — don't clear all of them as if you do fleas will begin to appear. You must learn to look at mushroom configurations and act accordingly. If a formation of mushrooms is enabling the Centipede to fall rapidly through a certain part of the screen blast them away to slow it down.

Not all mushroom formations are dangerous — some of them can actually be a bonus. The best example of this is the funnel formation in which the Centipede has to travel through a tunnel of mushrooms to advance down screen. If you position blaster in just the right position at the foot of the funnel you can completely annihilate the Cen-

tipede which is helpless to dodge your fire.

Large scores can only be picked up by blasting the spiders that drop out at you every so often — to score really highly let them get quite near to you before you let fire.

This policy can be a bit hairy in the later stages of the game when the action is much faster.

Centipede is a game of priorities — always pursue the highest point scoring possibility on the screen at any given time. Go for all the spiders, scorpions, and try to shoot the heads off the Centipedes.

One tip for getting Centipedes that are near to the bottom of the screen is to position yourself at the very bottom of the screen with one mushroom one row above you — when the centipede head comes in between let fire with all you've got — the rapid fire created by the mushroom and Centipede sandwich will enable you to blast the whole thing segment by segment till it is completely dead.

Be adventurous, take risks, and assert yourself.

Demon Attack

## DEMON ATTACK — TOUGH ALIENS

Demon Attack is arguably the toughest shoot 'em up type game available for the VCS.

No less than 84 waves of aliens are queueing up in this cartridge to attack your laser base.

This is the hybrid of two arcade games — space invaders and Phoenix, though unlike the official Atari Phoenix does not have the home base.

The basic strategy is similar to invaders — slide and shoot.

Keep constantly on the move thus preventing the aliens from cornering you.

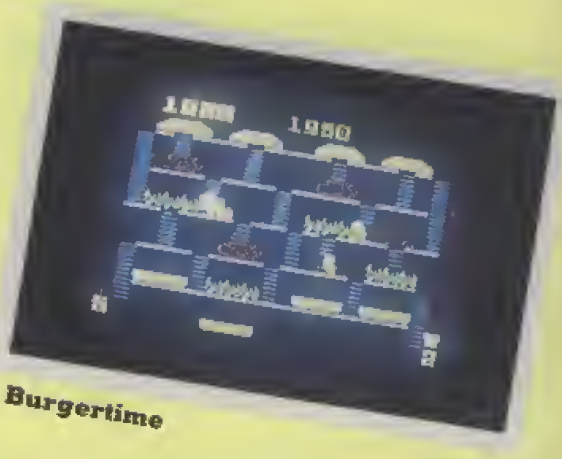
Pick off the low flying aliens first. If you kill these you may notice that the higher aliens flap around the screen harmlessly without firing back. You can now pick these off at your leisure.

There are 10 game options in Demon Attack. You can choose one or two players, regular or advanced aliens, and whether or not to have guided missiles.

If you are playing the guided missile variation, be reminded that the laser base moves together with the missile so you must be careful not to guide your base into an oncoming missile as you pick off the aliens.

Speed and good hand-eye co-ordination are crucial to success in Demon Attack.

Quest for the Rings



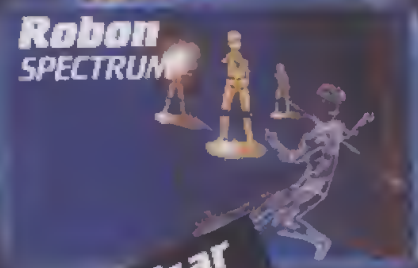
Burgertime

Raiders of the Lost Ark

Centipede

# SOFTEK

Masters of The Game



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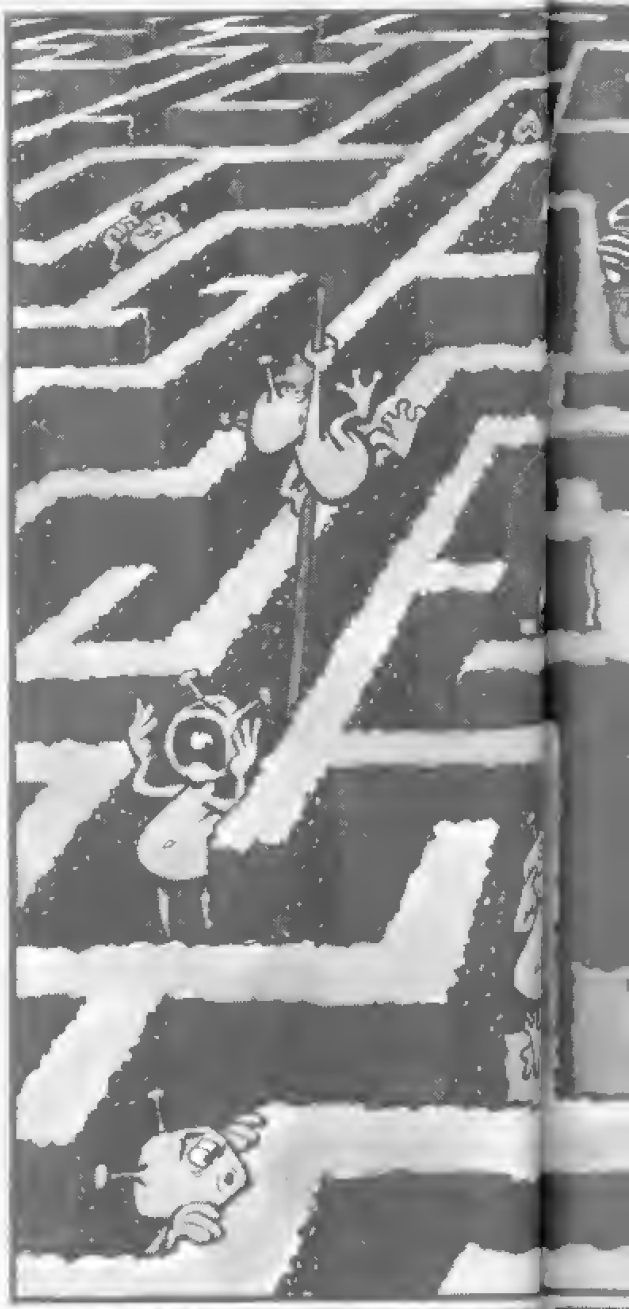
# 3D MAZE

**BY STEPHEN GODFREY**

**RUNS ON A TI 99/4a in 16K**



**The baffling corridors of mazes seem to have a certain strange fascination for our readers. Maze games have become firm favourites with you funny people out there! So by public demand we bring you more mind-boggling frustration.**

**Stephen Godfrey took a look at the /3D Maze game we printed for the Sharp MZ-80k in our Book of Games earlier this year and came up with a conversion for the TI 99/4a.**

**All you have to do is find your way through the maze and discover the exit. Sounds simple, but just try it!**

**You'll soon be tearing your hair in great big lumps — we guarantee it! But never mind Stephen has come up with a cure for premature baldness.**

**Stephen has also included an ingenious "cheat" command — but you'll have to play the game to find out just what that does for you. Other, more standard controls, are; "L" for left, "R" for right, "M" to move forward and "F" to turn 180 degrees.**

**Program notes**

**To make your life easier type in lines 14 to 27 first and RUN. Then substitute the characters shown below — where they occur — with the given keystroke. (Note: This will be different if you have a TI 99/4.)**

```
1 CALL CLEAR
2 PRINT :"3-D MAZE FOR TEXAS TI9
9/4(A)"
3 PRINT :"BY STEPHEN GODFREY"
4 PRINT :"ADAPTED FROM 3-D MAZE
BY"
5 PRINT :"MATTHEW BLAKSTAD IN TH
E"
6 PRINT :"'BOOK OF GAMES' FREE W
ITH"
7 PRINT :"FEBRUARY 1983 C &/V.G.
"
8 PRINT :"PRESS ANY KEY"
9 CALL KEY(0,K,S):: IF NOT S THE
N 9 ELSE CALL CLEAR
10 PRINT "YOU HAVE TO FIND YOUR
```

```
WAY": :"OUT OF A MAZE. YOU ARE G
IVEN": :"A 3-D VIEW OF THE MAZE
FROM": :"THE POINT WHERE YOU STA
ND."
11 PRINT :"YOUR CONTROLS ARE:":
: :"L - TURN LEFT": :"R - TURN R
IGHT": :"F - TURN 180 DEGREES":
:"M - MOVE FORWARD": :"C - CHEAT
 (ONLY 5 ALLOWED!)"
12 PRINT :"PRESS ANY KEY"
13 CALL KEY(0,K,S):: IF NOT S TH
EN 13
14 DATA FFFFFFFFFFFFFFFF
15 DATA 8040201008040201
16 DATA 0102040810204080
17 DATA 00000000000000FF
```

```
18 DATA FF0000000000000
19 DATA 8080808080808080
20 DATA 0101010101010101
21 DATA 808080808080FF
22 DATA FF0101010101010101
23 DATA FF8080808080808080
24 DATA 0101010101010101FF
25 DATA 1,133,232,298,20,144,237
,299
26 DATA 20,12,6,2,2,3,5,7
27 FOR T=1 TO 11 :: READ D$ :: C
ALL CHAR(127+T,D$):: NEXT T
28 CALL CHAR(120,"383810FE103844
82")
29 CALL CHAR(121,"001112D4F8D412
11")
30 CALL CHAR(122,"82443810FE1038
38")
31 CALL CHAR(123,"88482B1F2B4888
00")
32 CALL CLEAR :: CALL SCREEN(1)
33 PRINT "\                    /"
34 PRINT " \                  /"
35 PRINT "  \    3-D MAZE    /"
36 PRINT "   \ ========== /"
37 PRINT "    |           /  "
38 PRINT "    |          /   "
39 PRINT "    |___      /    "
40 PRINT "    |  |\     |    "
41 PRINT "    |  | |    |    "
42 PRINT "    |  | |\   |    "
43 PRINT "    |  | |/   |    "
44 PRINT "    |  | /    |    "
45 PRINT "    |__/     |    "
46 PRINT "    |        \    "
47 PRINT "    |         \   "
48 PRINT "    |          \  "
49 PRINT "   /            \"
50 PRINT "  /              \"
51 PRINT " /                \"
52 PRINT "/PLEASE WAIT.....\"
54 FOR T=1 TO 14 :: CALL COLOR(T
,16,1):: NEXT T
55 DIM CL(2,4):: FOR I=1 TO 2 ::
 FOR J=1 TO 4 :: READ CL(I,J)::
NEXT J :: NEXT I
56 RANDOMIZE
57 LI=6+INT(RND*5):: LJ=6+INT(RN
D*5):: DIR=INT(RND*4)+1 :: DD=DI
R :: CI=LI :: CJ=11-LJ
58 DIM DW(4):: FOR I=1 TO 4 :: R
EAD DW(I):: NEXT I
59 DIM DL(2,2):: DL(1,1)=129 ::
DL(1,2)=130 :: DL(2,1)=130 :: DL
(2,2)=129
60 DIM VL(2):: VL(1)=134 :: VL(2
)=133
61 DIM DR(4):: FOR I=1 TO 4 :: R
```

▷▷

```
EAD DR(I):: NEXT I
62 CALL COLOR(0,16,1)
63 DISPLAY AT(23,2)SIZE(18):"SEL
ECT MAZE(1-3):";:: ACCEPT AT(23,
19)SIZE(1)BEEP,VALIDATE(DIGIT):M
Z :: IF MZ<1 OR MZ>3 THEN 63
64 IF MZ=1 THEN RESTORE 204 ELSE
 IF MZ=2 THEN RESTORE 214 ELSE R
ESTORE 224
65 DIM MS(10,10):: FOR I=1 TO 10
 :: FOR J=1 TO 10 :: READ MS(I,J
):: NEXT J :: NEXT I
66 CALL CLEAR
67 TI=LI :: TJ=LJ :: FOR CA=1 TO
 4
68 FOR SD=1 TO 2
69 DV=DIR+(3-2*SD):: IF DV=0 THE
N DV=4
70 IF DV=5 THEN DV=1
71 TV=MS(TI,TJ)/DR(DV)
72 IF INT(TV)<>TV THEN 119
73 FOR I=CL(SD,CA)TO CL(SD,CA)+(
35-2*SD)*(4-CA)STEP (35-2*SD)::
CALL POKE(I,DL(SD,1)):: NEXT I
74 IF CA=4 THEN I=CL(SD,CA)+32 :
: GOTO 76
75 TV=I+(SD*2-3):: E=0 :: FOR I=
TV TO TV+32*(DW(CA)-2*(4-CA)-3)S
TEP 32 :: E=E+1 :: NEXT I :: Y=I
NT(TV/32)+1 :: X=TV-INT(TV/32)*3
2+1 :: CALL VCHAR(Y,X,VL(SD),E)
76 TV=I :: FOR I=TV TO TV+(29+2*
SD)*(4-CA)STEP (29+2*SD):: CALL
POKE(I,DL(SD,2)):: NEXT I
77 E=0 :: X=CL(SD,CA)+(2*SD-3)::
 FOR I=X TO CL(SD,CA)+(2*SD-3)+3
2*DW(CA)-32 STEP 32 :: E=E+1 ::
NEXT I :: Y=INT(X/32)+1 :: X=X-I
NT(X/32)*32+1 :: CALL VCHAR(Y,X,
VL(SD),E)
78 NEXT SD
79 IF CA=4 THEN 86
80 TV=MS(TI,TJ)/DR(DIR)
81 IF INT(TV)=TV THEN 114
82 IF DIR=1 THEN TI=TI-1 :: IF T
I=0 THEN CALL POKE(CL(1,4),69)::
 GOTO 87
83 IF DIR=2 THEN TJ=TJ+1
84 IF DIR=3 THEN TI=TI+1
85 IF DIR=4 THEN TJ=TJ-1
86 NEXT CA
87 CALL COLOR(13,16,1,14,16,1)
88 CALL KEY(0,K,S):: IF NOT S TH
EN 88
89 A$=CHR$(K)
90 IF A$="L" THEN TN=1
91 IF A$="R" THEN TN=-1
92 IF A$="F" THEN TN=2
```

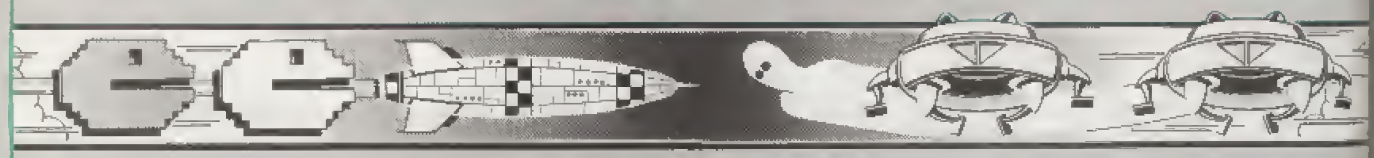
```
93 IF A$="M" THEN 101
94 IF A$="C" THEN CC=CC+1 :: IF
CC>5 THEN 88 ELSE TN=3
95 IF TN=0 THEN 88
96 IF TN<3 THEN 98
97 ON MZ GOSUB 132,156,180 :: CA
LL POKE(-31+64*LI+2*(11-LJ),119+
DIR):: CALL COLOR(13,16,1,14,16,
1):: FOR T=1 TO 2000 :: NEXT T :
: GOTO 100
98 DIR=DIR+TN :: IF DIR=0 THEN D
IR=4
99 IF DIR>4 THEN DIR=DIR-4
100 TN=0 :: CALL CLEAR :: GOTO 6
7
101 IF MS(LI,LJ)/DR(DIR)=INT(MS(
LI,LJ)/DR(DIR))THEN CALL SOUND(4
00,262,0):: DISPLAY AT(12,5)SIZE
(10)BEEP:"HIT WALL !" :: GOTO 88
102 IF DIR=1 THEN LI=LI-1 :: IF
LI=0 THEN 107
103 IF DIR=2 THEN LJ=LJ+1
104 IF DIR=3 THEN LI=LI+1
105 IF DIR=4 THEN LJ=LJ-1
106 GOTO 100
107 CALL SOUND(3000,262,0,330,0,
523,0)
108 CALL SOUND(1,262,0,330,0,523
,0)
109 CALL CLEAR :: PRINT "CONGRA
TULATIONS!!"
110 PRINT
111 PRINT "YOU HAVE FOUND THE EX
IT!"
112 PRINT
113 INPUT "ANOTHER GO?":G$ :: IF
 G$="N" THEN END ELSE IF G$="Y"
THEN RUN ELSE 113
114 C1=CL(1,CA)+(5-CA)*33 :: C2=
```

```
CL(2,CA)+(5-CA)*31 :: WH=DW(CA)-
2*(5-CA)-1
115 X=C1-32 :: CALL HCHAR(INT(X/
32)+1,X-INT(X/32)*32+1,131,C2-C1
+1)
116 E=WH+1 :: CALL VCHAR(INT(C1/
32)+1,C1-INT(C1/32)*32+1,VL(2),E
):: CALL VCHAR(INT(C2/32)+1,C2-I
NT(C2/32)*32+1,VL(2),E)
117 E=0 :: X=C1+32*WH+32 :: FOR
I=C1+32*WH TO C2+32*WH :: E=E+1
:: NEXT I :: CALL HCHAR(INT(X/32
)+1,X-INT(X/32)*32+1,132,E)
118 GOTO 87
119 SI=TI :: SJ=TJ
120 IF DV=1 THEN SI=SI-1 :: IF S
I=0 THEN 78
121 IF DV=2 THEN SJ=SJ+1
122 IF DV=3 THEN SI=SI+1
123 IF DV=4 THEN SJ=SJ-1
124 TV=MS(SI,SJ)/DR(DIR)
125 IF INT(TV)<>TV THEN 78
126 DWL=DW(CA)-2*(5-CA):: CLL=CL
(SD,CA)+32*(4-CA):: DM=3-2*SD
127 FOR I=CLL TO CLL+DM*(4-CA)ST
EP DM :: CALL POKE(I,131):: NEXT
 I
128 I=I+(29+2*SD):: IF CA=4 THEN
 130
129 TV=I :: E=0 :: FOR I=TV TO T
V+32*(DWL-1)STEP 32 :: E=E+1 ::
NEXT I :: CALL VCHAR(INT(TV/32)+
1,TV-INT(TV/32)*32+1,VL(SD),E)
130 TV=I :: FOR I=TV TO TV+(-DM)
*(4-CA)STEP -DM :: CALL POKE(I,1
32):: NEXT I
131 GOTO 78
132 PRINT "
133 PRINT "
134 PRINT "
135 PRINT "
136 PRINT "
137 PRINT "
138 PRINT "
139 PRINT "
140 PRINT "
141 PRINT "
142 PRINT "
```



```
143 PRINT "
144 PRINT "
145 PRINT "
146 PRINT "
147 PRINT "
148 PRINT "
149 PRINT "
150 PRINT "
151 PRINT "
152 PRINT "
153 PRINT
154 PRINT
155 RETURN
156 PRINT "
157 PRINT "
158 PRINT "
159 PRINT "
160 PRINT "
161 PRINT "
162 PRINT "
163 PRINT "
164 PRINT "
165 PRINT "
166 PRINT "
167 PRINT "
168 PRINT "
169 PRINT "
170 PRINT "
171 PRINT "
172 PRINT "
173 PRINT "
```

# LICENSED TO THRILL



**How your favourite heroes are turned into your favourite games.**
**By Eugene Lacey**

Licensing video games is a marketing man's dream. Theory and imagination meet head on as the most unlikely titles, characters, and products are "tied up" at enormous cost to be converted into home video games.

It all started with arcade games. It was an obvious step for the home video games manufacturers to license the title of a popular arcade game and convert it for home use.

Gamers now take for granted that successful arcade titles will eventually be converted for the home systems. But just five years ago it was thought very innovative when Atari introduced home versions of Space Invaders and Breakout for home use.

Now any arcade game which produces the slightest tremour of popularity in the arcades is leapt on by the large firms license-hunters.

Many games are tied up even before they go into the arcades, just in case they are hits.

Licensing has been the salvation of the arcade game manufacturers many of whom receive millions of pounds for their games.

Of course this has its bad side as well as its good side and many people in the arcade business believe that quick conversions to the home are killing the revenues of the arcade proprietors.

Whatever the effects on the arcade industry these games are key targets for the home game manufacturers.

Parker Brothers spent four million dollars each to get Popeye, Q*bert and Tutankham and expect to have to pay at least this in the future for good titles.

Colecovision could not quote an exact figure for licensing arcade games because the deals they make are usually for more then one game. One thing is certain though — with two of the hottest titles of the year in the shape of Zaxxon and Donkey Kong the sums involved would, as with Parker Brothers, be measured in at least six figures.

Atari are in a slightly more favourable position than some of their competitors as they have their own arcade division.

This means that they already own the rights to several hit games, Centipede, Pole Position, and Xevious to name but three.

Fortunes are made on the rights to arcade games but even larger fortunes are made on the rights to films.

Mattel Electronics were the first company to produce a home video game based on a popular film release — with their Tron games for the Intellivision.

Their deal with Walt Disney also enables them to produce games based on some of the Disney cartoon charaters.

Atari followed into films in a big way last year with a 25 million dollar deal with Stephen Spielberg which enabled them to produce both **ET** and **Raiders of the Lost Ark** games for the V.C.S.

The list of game-of-the-film titles is now a larger category than sports simulations.

Like all so-called comprehensive lists I've probably left something out. However, here are all the video games, some of which are not available in the UK, based on feature films.

ET, Raiders of the Lost Ark, Jedi Arena, Return of the Jedi, The Empire Strikes Back, Superman, Spiderman, M.A.S.H., Tron — Deadly Discs, Tron — Maze-a-Tron, Tron — Solar Sailor, Buck Rogers, China Syndrome and James Bond 007.

Before you read this there will probably be half a dozen other films announced for the video games treatment.

Although several films have now been converted by far and away the most expensive must surely be the Star War games.

The exact details of Parker Brothers deal with George Lucas, the director of the Star War films, is not known. We do know that Parker Brothers have the rights to produce all sorts of games and toys based on the films

There will be dozens of Star Wars toys in the shops this Christmas from large plastic Millenium Falcons, models of R2-D2, C3-PO and Chew Baca and the video games — of which Parker already have three, with one more in the pipeline.

Unlike Spielberg, who received his money "up front" from Atari, Lucas earns a percentage of the profits of all the Star Wars toys.

Blockbuster films are by no means the only areas being looked at by the game license hunters.

Anything which has popular awareness, particularly among young people, can be turned into a game.

The Americans band Journey recently became the first pop group to have their own video game and are likely to be followed by Devo at number two. Come on Duran Duran let's have the first British group's video game.

Television programmes are also being looked at and in America a firm recently advertised a Dukes of Hazard game, which should just beat Atari's Muppets game on to the shelves.

We have probably not even scratched the surface of video and computer game licenses.

One clue to what to expect in the future is a game recently gone on sale in America with the charmingly ridiculous name of Attack of the Beef Steak Tomatoes.

```
174 PRINT "
"
175 PRINT "
"
176 PRINT "
"
177 PRINT
178 PRINT
179 RETURN
180 PRINT "
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181 PRINT "
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182 PRINT "
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183 PRINT "
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184 PRINT "
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185 PRINT "
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186 PRINT "
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187 PRINT "
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188 PRINT "
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189 PRINT "
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190 PRINT "
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191 PRINT "
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192 PRINT "
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193 PRINT "
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194 PRINT "
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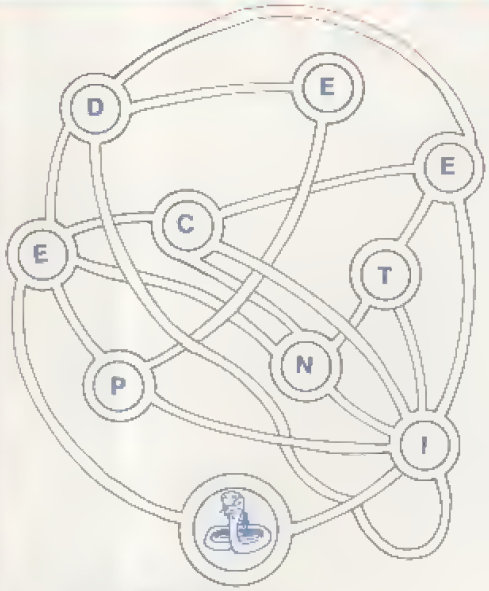
195 PRINT "
"
196 PRINT "
"
197 PRINT "
"
198 PRINT "
"
199 PRINT "
"
200 PRINT "
"
201 PRINT
202 PRINT
203 RETURN
204 DATA 14,15,42,14,10,10,2,6,1
4,6
205 DATA 21,14,15,21,70,10,15,21
,21,21
```

```
206 DATA 21,21,14,5,10,10,2,15,2
1,21
207 DATA 7,3,35,10,10,6,35,10,15
,21
208 DATA 21,35,10,10,6,21,14,10,
10,15
209 DATA 105,14,10,10,15,105,35,
10,10,6
210 DATA 70,5,10,10,10,2,10,2,10
,15
211 DATA 14,10,10,10,10,3,42,7,1
0,30
212 DATA 35,10,2,6,70,15,21,21,7
0,6
213 DATA 70,10,15,35,10,10,5,5,1
0,15
214 DATA 42,14,10,2,10,15,14,10,
10,6
215 DATA 21,35,30,21,14,10,5,10,
6,21
216 DATA 35,10,6,21,21,14,10,6,2
1,21
217 DATA 14,6,21,21,21,35,6,21,2
1,21
218 DATA 21,105,21,21,35,10,15,2
1,21,21
219 DATA 35,10,3,35,10,10,10,15,
105,21
220 DATA 14,10,5,6,14,6,14,10,10
,15
221 DATA 21,14,6,105,21,21,35,10
,10,6
222 DATA 21,21,7,10,15,21,14,10,
30,21
223 DATA 35,15,35,10,10,5,5,10,1
0,15
224 DATA 14,10,10,6,21,14,2,10,6
,42
225 DATA 21,14,6,21,35,15,21,42,
21,21
226 DATA 21,42,21,21,14,2,15,21,
35,15
227 DATA 7,2,3,21,21,21,14,3,14,
6
228 DATA 21,21,105,21,21,21,21,3
5,15,21
229 DATA 21,35,10,15,21,35,5,10,
10,3
230 DATA 35,10,10,10,5,10,2,10,6
,21
231 DATA 42,70,10,2,10,6,21,42,3
5,15
232 DATA 7,21,2,3,14,5,5,5,10,6
233 DATA 105,70,15,105,35,10,10,
30,70,15
234 SUB POKE(A,B):: Y=INT(A/32):
: X=A-Y*32 :: CALL HCHAR(Y+1,X+1
,B):: SUBEND
```

# PUZZLING

## SNACKBITE

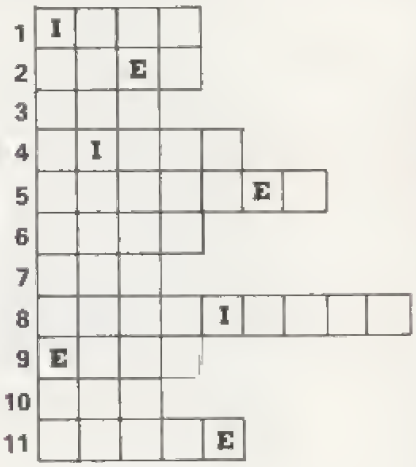



*Cyril, the word-eating snake, takes his daily meal by leaving his lair and wandering along the tunnels which connect the chambers of his den. At each chamber he takes a bite at a letter and he is so intelligent that his path always forms words.*

*He cannot turn round in a tunnel and will not visit the same chamber more than once in any one word.*

*What puts his I.Q. way above that of his fellow computer asps is that the last letter of one word is also the first letter of the next.*

*Can you find the eleven words which he makes before returning to his sleeping quarters?*




## PATRIOTIC PACMAN

*It is only right and proper that P****E W*******'s first toddler micro should be accompanied by software of a regal and loyal nature.*

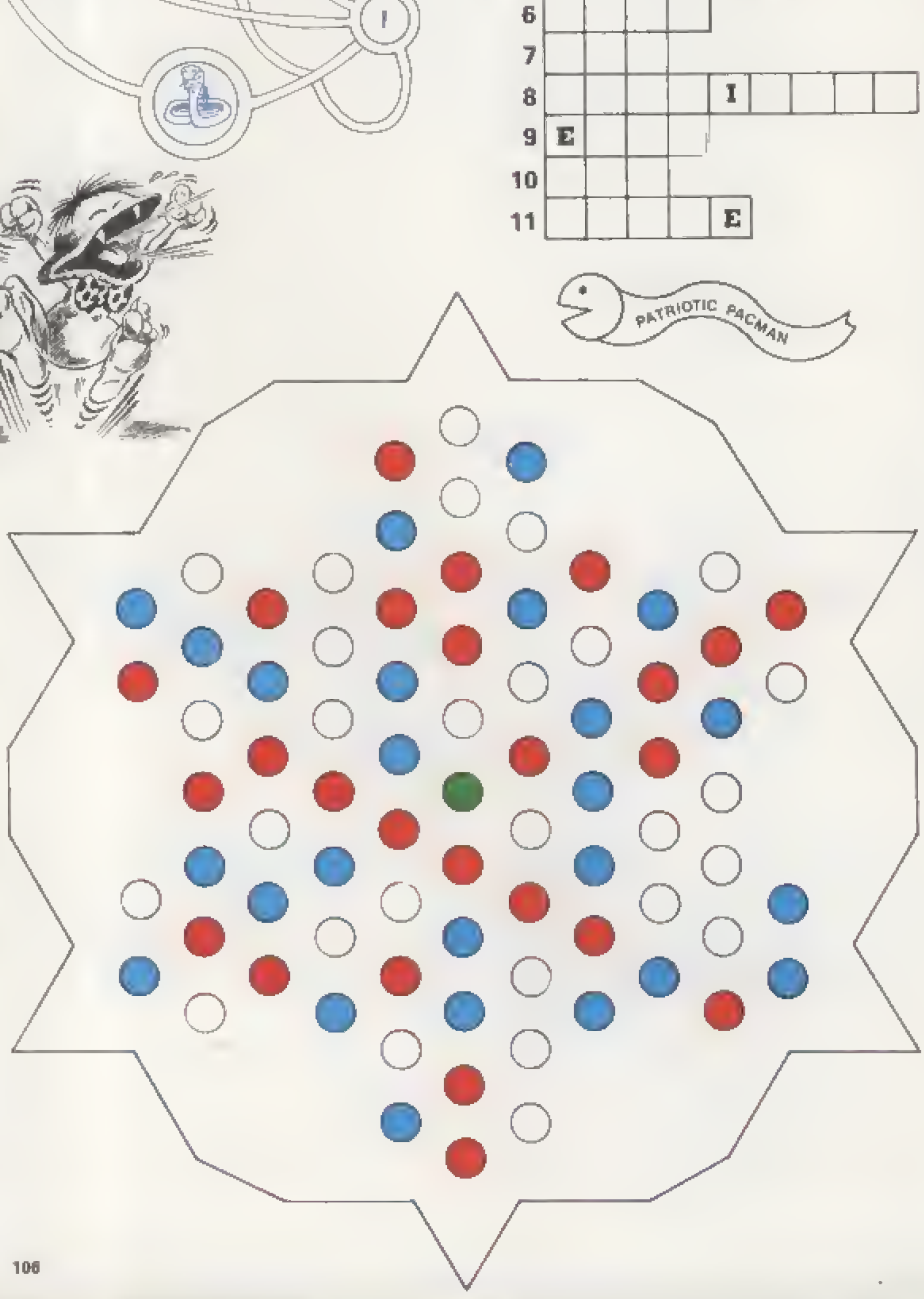
*In his version of Munchyman, the dots are coloured Red, White and Blue and the patriotic little gobbler always eats the dots in that order, Blue being followed by Red again and so on.*

*Once a dot has been visited it cannot be used or passed through again and the task is to consume as many dots as possible before becoming stuck.*

*From any dot you can only move to a* ***neighbouring*** dot — i.e. one you can reach without passing between two other dots. Starting from the Green dot at the centre, just what is the longest path you can find?

For family fun, place a piece of tracing or thin paper over our picture and draw on that, then everyone can have a turn.

PUZZLING SOLUTIONS ON PAGE 128



# INTO THE FUTURE

***what gaming's got in store***
***By Terry Pratt***

Imagine your ideal game with graphics that leave nothing to the imagination.

It comes to your home where you sit alone but can play against other people sitting in their own living rooms.

It has stereo sound and the explosions actually rock your chair.

It may be science fiction at the moment but it will be happening very shortly. All of the technology is already here and it won't be long before someone packages a game which puts you on the inside with the action happening around you.

The most important development is laser disc games. The next generation of arcade games will feature laser disc technology with film action reacting to the player's movement and firing.

Already a game called Astron Belt is in UK arcades, showing what is possible on laser disc.

Astron Belt puts a computer graphic ship in front of a film background, which comes from a Japanese science fiction film. The background consists of planets, stars, alien ships and alien landscapes and when the computer registers a hit on an alien craft, the screen dissolves into a bright orange explosion.

The game has plenty of flaws but these should be corrected and improved as the manufacturers understand the medium better. The main problem with laser disc is interruption in the game action.

This is due to the speed at which the laser can search appropriate scenes and sounds called for by the player's response.

One way around the disc response time is to store the information in an efficient way so that it follows the game's logical sequence. Another more expensive way is to use a double disc system so that one disc follows the current action while the second prepares for the player's next move, providing a "seamless" picture. A laser disc cabinet costs about £2,000 but it is easily re-usable with a new game disc.

Other examples of games using this technology are: Dragon's Lair and Eon and the Time Tunnel.

Dragon's Lair is a fully animated sword-and-sorcery cartoon with the player taking the part of Dirk the Daring. He swashbuckles through a castle loaded with scorpions, snakes, trapdoors and pools of fire.

Eon and the Time Tunnel is a similar fantasy theme but the player travels through a series of movie scenes featuring ominous Welsh castles and futuristic cities.

Astron Belt also features the vibraseat. A chair which shakes and vibrates in time with the action, so those explosions can really rock you to the core.

Another arcade breakthrough is in allowing players to take on each other as well as the computer. A Californian company, Simutron has just produced the Simulator game system which allows up to 16 players to interact on one tournament centre.

Each player is sat in a cubicle with up to four screens of action in front of him. The first game using this system is called: Star Trek: The Motion Picture (not to be confused with the current Star Trek game going the rounds in arcades).

A player has four screens of information, showing tactical displays and laser disc film from the movie Star Trek. It has a hundred buttons, voice synthesis and stereo sound. If he wants to compete against a friend, the other players' ships appear on his screen as rebel fleets.

For the future they plan a sports simulation, a fantasy game and games based on other popular movies. The system can also be connected down a phoneline to other similar centres allowing a nationwide or even worldwide tournament.

In the U.S. they are already doing without the phones, using cables. The system is currently limited to a small audience served by PlayCable, a New York City-based firm, half-owned by Mattel. This winter will see the launch of the Games Network of Los Angeles and three other companies (including Atari) are exploring the possibilities.

PlayCable offers subscribers ($15 a month) 20 video games which change every month. The system can only be used by owners of Mattel's Intellivision System and games are downloaded into the system in about 10 seconds.

Games Network will place a microcomputer in the subscribers home for $50 (about £35) and then it's $14 a month for 20 games, including some arcade hits.

It's all just around the corner.

# METEOR ATTACK

## BY PETER AND MARK WRIGHT

### RUNS ON AN ATARI 400/800 IN 16k.

**Your city is in danger. A heavy shower of meteors is heading your way from the depths of space. Take off in your space-chopper and blast the deadly rocks with short range missiles before they crash down on the gleaming spires and towers of the city. There are three skill levels built into this game which will test your speed and skill to the limit.. Instructions are included in the program. Can you save the city?**

```
1 REM METEOR ATTACK BY PETER AND MARK WR
IGHT. OCTOBER 1982
5 OPEN #1,4,0,"K:"
10 GRAPHICS 1:SETCOLOR 2,12,6:SETCOLOR 0
,0,10:SETCOLOR 4,7,6:SETCOLOR 3,3,8
15 ? #6;"meteor attack":POKE 752,1:POKE
656,1:POKE 657,8:? " BY PETER & MARK WRI
GHT "
20 HITCLR=53278:COLR2=706:COLL=53261:PLC
OLL=53254:GOTO 3000
30 EX=50:H=4:L=0:D=0:POKE HITCLR,0:Y=181
:POKE COLR2,56
35 POKE 704,220:FOR E=1 TO 5
40 POKE HITCLR,0:W=INT(RND(0)*143)+48:IF
W/8=INT(W/8) THEN 45
42 IF L=1 THEN GOSUB 50
43 GOTO 40
45 GOTO 100
50 POKE 705,108:XM=XM-CC:POKE PLX1,XM:SO
UND 0,XM,8,12
52 IF PEEK(COLL)<>0 THEN POKE PLX1,0:POK
E PLX2,0:SOUND 0,0,0,0:SOUND 2,0,0,0:POP
:GOSUB 500:L=0:XM=187:GOTO 270
55 IF XM<48 THEN XM=187:POKE 705,118:POK
E PLX1,XM:L=0:SOUND 0,0,0,0
60 RETURN
```

Illustration: Dorian Cross

Photography: Keith Temple

# PINBALL CRAZY

**Tim Metcalfe finds he isn't the only one.**

Behind the quiet facade of suburban homes all over the country something strange is going on. In the quiet cul-de-sacs and peacaful tree-lined streets of towns and cities you'll find ordinary looking homes which hida a secret known only to a select few. Venturing into this secret world takes you on a nostalgic journey — but if the secret gets out then the residents of thase houses may have alraady discovered the shape of things to come!

Keith Templa, who lives on tha outskirts of London, near Croydon, is one of the few. The back room of his house is an Aladdins' cave of arcade memorabilia — with pride of place given over to two veteran pinball machines. All bumpers, bells and bright lights these machines ara Keith's pride and joy. Along with four other pins and a magnificent 50's styla juke-box that is!

Keith is just one of the 300 or so members of the Pinball Owners' Association which has kept the art of playing the silver ball alive during the lean years of the video boom. Now the game which grew up with rock 'n' roll and the Cold War is coming of age in tha era of synthesised pop and cruisa missiles.

More and more people are turning to pinball as an alternative to hammering the Smart bomb button on their favourite video game.

Kaith is pleased to see pinball making a comeback and although he is a fan of the older machines is raady to admit the modern games are just as good. "The older machines ara nice to play, but oftan tha modarn electronic pins are faster and give you a better game." Having said that his favourita pins are the "wooden-rail" machines from the 50's — so called because of the wooden strip along the sides of the cabinet.

Keith's love affair with pinball began when he was still at school in Lincolnshire. He used to nip down to tha local cafe and rattle up a few high scores.

Sevaral yaars later he was passing a shop in Croydon and saw a pin-table languishing in the window. "I thought to mysalf, I've got to have that!" Later, on his way home with a car full of old machinery he thought to himself: "What have I dona!"

But he learnad of the then recantly formed Pinball Owners' Association and realised that he wasn't alona in his passion for pinball. He joinad up — becoming one of the first members of the fledgling association — and since then has never looked back. He became the associations' Pinball Wizard at their annual convention in 1980, beating all-comars to that coveted prize.

Although Keith has six machines ha is just an average pinball fanatic. Other members taka their passion even further. Some have built special extensions to their homes to take collections of pin-tables which often run into double figures. There's a family of pinball fans who have a house full of machines and there's a rumour that ona membar owns an amazing 200 pins!

But what attracts people like Kaith to go to such lengths to presarve these old machines and encourage interest in tham? "I supposa there's a certain amount of nostalgia attached to it. But really it's the 64,000 dollar question and very difficult to answer!"

Keith is an art-restorar by trade and lavishas the same care and attention on old pintables as ha does on Victorian paintings.

Pinball has baen thought of as primitive compared to tha latest 3D stereo-sound vidao games. And admittedly many of the features you'll find on a modern pin data from the 30's and 40's. But pinball has made a bold step into tha microchip age.

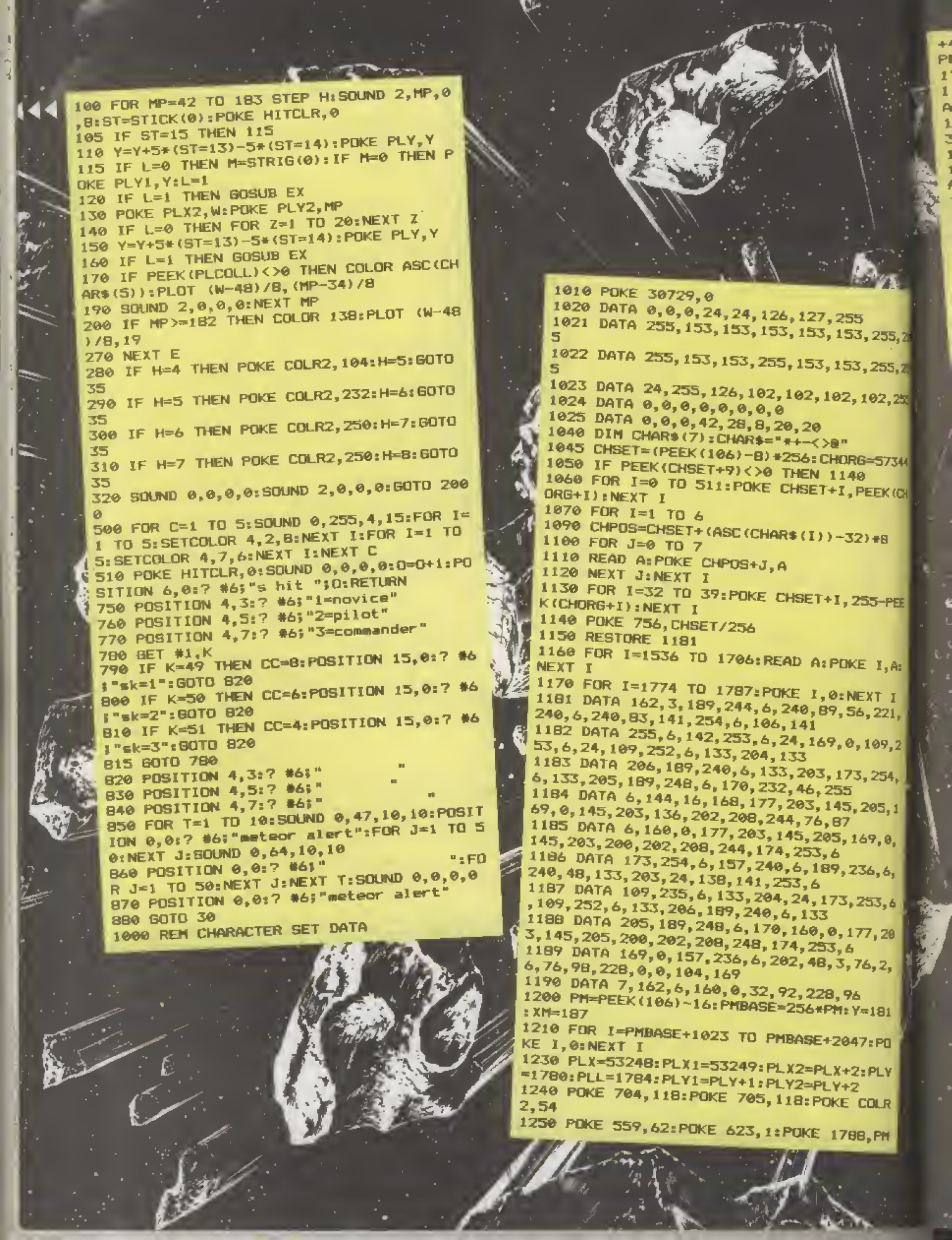
Electro-mechanical machines are things of the past — replaced by chip controlled gamas. Some even speak to you as you flip the ball around. Thare ara pins based on video gama themes, like the Williams Defander and combined video and pinball games like Bally's Baby Pac-Man. All a far cry from the first pin-tables which had light bulbs to mark up the scora instead of digital displays!

Pinball has also survivad conversion to the small screen. Some video games centres have pinball cartridges produced for them and computer owners can also play pinball.

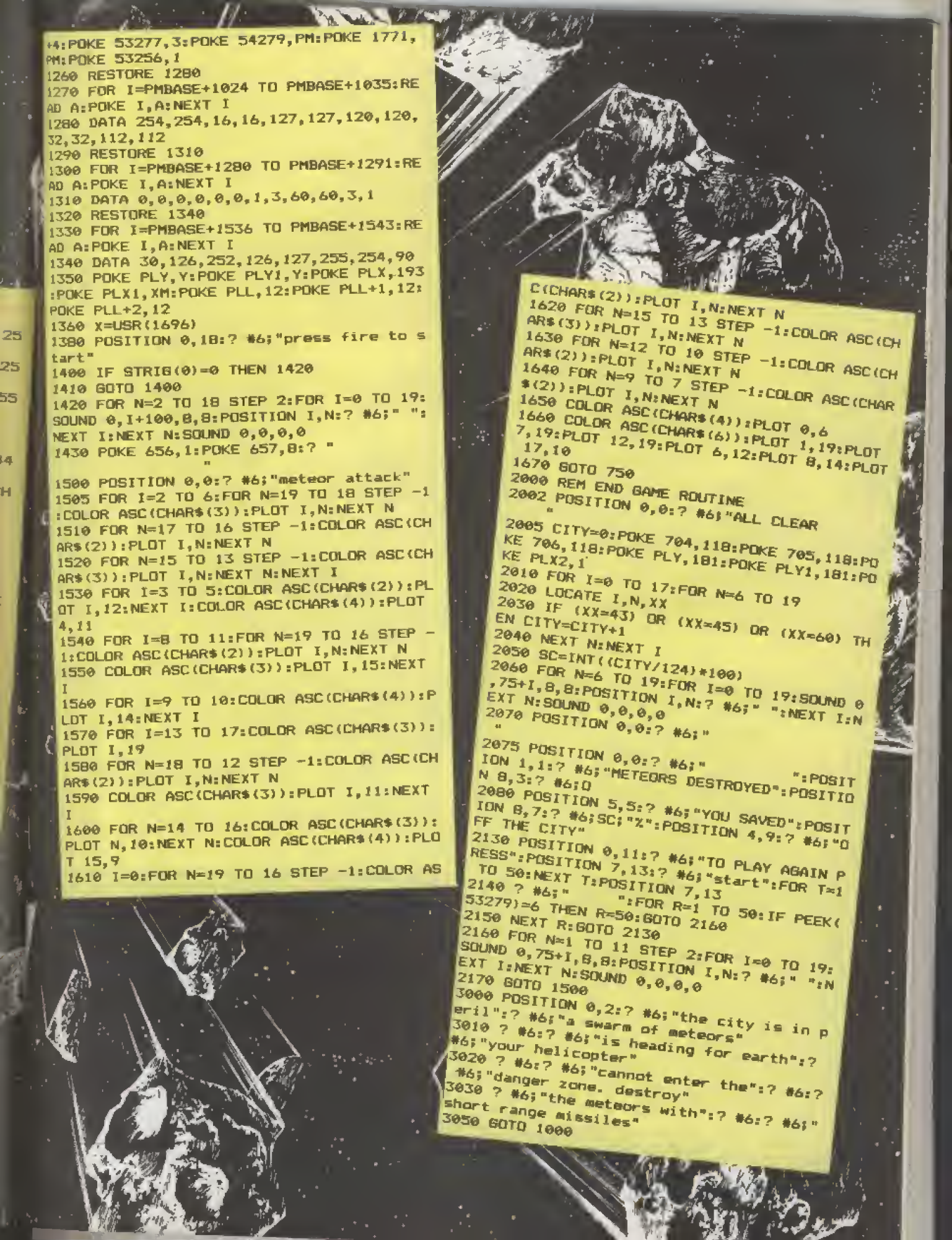
Tandy brought out a cartridge for the TRS-80 Colour Computer which had the added attraction of allowing the player to design his own playfield. Texas owners can also play the game.

But for people lika Keith their will never be a substitute for the real thing. Thay'll be Pinball Crazy until their flippar fingars seize-up!

If you want to know more about pinball or the Pinball Owners' Association contact tha association's headquarters at "Arcadia", 465 Cranbrook Road, Ilford, Essex.



```
100 FOR MP=42 TO 183 STEP H:SOUND 2,MP,0
,8:ST=STICK(0):POKE HITCLR,0
105 IF ST=15 THEN 115
110 Y=Y+5*(ST=13)-5*(ST=14):POKE PLY,Y
115 IF L=0 THEN M=STRIG(0):IF M=0 THEN P
OKE PLY1,Y:L=1
120 IF L=1 THEN GOSUB EX
130 POKE PLX2,W:POKE PLY2,MP
140 IF L=0 THEN FOR Z=1 TO 20:NEXT Z
150 Y=Y+5*(ST=13)-5*(ST=14):POKE PLY,Y
160 IF L=1 THEN GOSUB EX
170 IF PEEK(PLCOLL)<>0 THEN COLOR ASC(CH
AR$(S)):PLOT (W-48)/8,(MP-34)/8
190 SOUND 2,0,0,0:NEXT MP
200 IF MP>=182 THEN COLOR 138:PLOT (W-48
)/8,19
270 NEXT E
280 IF H=4 THEN POKE COLR2,104:H=5:GOTO
35
290 IF H=5 THEN POKE COLR2,232:H=6:GOTO
35
300 IF H=6 THEN POKE COLR2,250:H=7:GOTO
35
310 IF H=7 THEN POKE COLR2,250:H=8:GOTO
35
320 SOUND 0,0,0,0:SOUND 2,0,0,0:GOTO 200
0
500 FOR C=1 TO 5:SOUND 0,255,4,15:FOR I=
1 TO 5:SETCOLOR 4,2,8:NEXT I:FOR I=1 TO
5:SETCOLOR 4,7,6:NEXT I:NEXT C
510 POKE HITCLR,0:SOUND 0,0,0,0:O=O+1:PO
SITION 6,0:? #6;"s hit ";O:RETURN
750 POSITION 4,3:? #6;"1=novice"
760 POSITION 4,5:? #6;"2=pilot"
770 POSITION 4,7:? #6;"3=commander"
780 GET #1,K
790 IF K=49 THEN CC=8:POSITION 15,0:? #6
;"sk=1":GOTO 820
800 IF K=50 THEN CC=6:POSITION 15,0:? #6
;"sk=2":GOTO 820
810 IF K=51 THEN CC=4:POSITION 15,0:? #6
;"sk=3":GOTO 820
815 GOTO 780
820 POSITION 4,3:? #6;"          "
830 POSITION 4,5:? #6;"          "
840 POSITION 4,7:? #6;"          "
850 FOR T=1 TO 10:SOUND 0,47,10,10:POSIT
ION 0,0:? #6;"meteor alert":FOR J=1 TO 5
0:NEXT J:SOUND 0,64,10,10
860 POSITION 0,0:? #6;"                ":FO
R J=1 TO 50:NEXT J:NEXT T:SOUND 0,0,0,0
870 POSITION 0,0:? #6;"meteor alert"
880 GOTO 30
1000 REM CHARACTER SET DATA
1010 POKE 30729,0
1020 DATA 0,0,0,24,24,126,127,255
1021 DATA 255,153,153,153,153,153,255,25
5
1022 DATA 255,153,153,255,153,153,255,25
5
1023 DATA 24,255,126,102,102,102,102,255
1024 DATA 0,0,0,0,0,0,0,0
1025 DATA 0,0,0,42,28,8,20,20
1040 DIM CHAR$(7):CHAR$="*+-<>@"
1045 CHSET=(PEEK(106)-8)*256:CHORG=57344
1050 IF PEEK(CHSET+9)<>0 THEN 1140
1060 FOR I=0 TO 511:POKE CHSET+I,PEEK(CH
ORG+I):NEXT I
1070 FOR I=1 TO 6
1090 CHPOS=CHSET+(ASC(CHAR$(I))-32)*8
1100 FOR J=0 TO 7
1110 READ A:POKE CHPOS+J,A
1120 NEXT J:NEXT I
1130 FOR I=32 TO 39:POKE CHSET+I,255-PEE
K(CHORG+I):NEXT I
1140 POKE 756,CHSET/256
1150 RESTORE 1181
1160 FOR I=1536 TO 1706:READ A:POKE I,A:
NEXT I
1170 FOR I=1774 TO 1787:POKE I,0:NEXT I
1181 DATA 162,3,189,244,6,240,89,56,221,
240,6,240,83,141,254,6,106,141
1182 DATA 255,6,142,253,6,24,169,0,109,2
53,6,24,109,252,6,133,204,133
1183 DATA 206,189,240,6,133,203,173,254,
6,133,205,189,248,6,170,232,46,255
1184 DATA 6,144,16,168,177,203,145,205,1
69,0,145,203,136,202,208,244,76,87
1185 DATA 6,160,0,177,203,145,205,169,0,
145,203,200,202,208,244,174,253,6
1186 DATA 173,254,6,157,240,6,189,236,6,
240,48,133,203,24,138,141,253,6
1187 DATA 109,235,6,133,204,24,173,253,6
,109,252,6,133,206,189,240,6,133
1188 DATA 205,189,248,6,170,160,0,177,20
3,145,205,200,202,208,248,174,253,6
1189 DATA 169,0,157,236,6,202,48,3,76,2,
6,76,98,228,0,0,104,169
1190 DATA 7,162,6,160,0,32,92,228,96
1200 PM=PEEK(106)-16:PMBASE=256*PM:Y=181
:XM=187
1210 FOR I=PMBASE+1023 TO PMBASE+2047:PO
KE I,0:NEXT I
1230 PLX=53248:PLX1=53249:PLX2=PLX+2:PLY
=1780:PLL=1784:PLY1=PLY+1:PLY2=PLY+2
1240 POKE 704,118:POKE 705,118:POKE COLR
2,54
1250 POKE 559,62:POKE 623,1:POKE 1788,PM
```



```
+4:POKE 53277,3:POKE 54279,PM:POKE 1771,
PM:POKE 53256,1
1260 RESTORE 1280
1270 FOR I=PMBASE+1024 TO PMBASE+1035:RE
AD A:POKE I,A:NEXT I
1280 DATA 254,254,16,16,127,127,120,120,
32,32,112,112
1290 RESTORE 1310
1300 FOR I=PMBASE+1280 TO PMBASE+1291:RE
AD A:POKE I,A:NEXT I
1310 DATA 0,0,0,0,0,0,1,3,60,60,3,1
1320 RESTORE 1340
1330 FOR I=PMBASE+1536 TO PMBASE+1543:RE
AD A:POKE I,A:NEXT I
1340 DATA 30,126,252,126,127,255,254,90
1350 POKE PLY,Y:POKE PLY1,Y:POKE PLX,193
:POKE PLX1,XM:POKE PLL,12:POKE PLL+1,12:
POKE PLL+2,12
1360 X=USR(1696)
1380 POSITION 0,18:? #6;"press fire to s
tart"
1400 IF STRIG(0)=0 THEN 1420
1410 GOTO 1400
1420 FOR N=2 TO 18 STEP 2:FOR I=0 TO 19:
SOUND 0,I+100,8,8:POSITION I,N:? #6;" ":
NEXT I:NEXT N:SOUND 0,0,0,0
1430 POKE 656,1:POKE 657,8:? "
                "
1500 POSITION 0,0:? #6;"meteor attack"
1505 FOR I=2 TO 6:FOR N=19 TO 18 STEP -1
:COLOR ASC(CHAR$(3)):PLOT I,N:NEXT N
1510 FOR N=17 TO 16 STEP -1:COLOR ASC(CH
AR$(2)):PLOT I,N:NEXT N
1520 FOR N=15 TO 13 STEP -1:COLOR ASC(CH
AR$(3)):PLOT I,N:NEXT N:NEXT I
1530 FOR I=3 TO 5:COLOR ASC(CHAR$(2)):PL
OT I,12:NEXT I:COLOR ASC(CHAR$(4)):PLOT
4,11
1540 FOR I=8 TO 11:FOR N=19 TO 16 STEP -
1:COLOR ASC(CHAR$(2)):PLOT I,N:NEXT N
1550 COLOR ASC(CHAR$(3)):PLOT I,15:NEXT
I
1560 FOR I=9 TO 10:COLOR ASC(CHAR$(4)):P
LOT I,14:NEXT I
1570 FOR I=13 TO 17:COLOR ASC(CHAR$(3)):
PLOT I,19
1580 FOR N=18 TO 12 STEP -1:COLOR ASC(CH
AR$(2)):PLOT I,N:NEXT N
1590 COLOR ASC(CHAR$(3)):PLOT I,11:NEXT
I
1600 FOR N=14 TO 16:COLOR ASC(CHAR$(3)):
PLOT N,10:NEXT N:COLOR ASC(CHAR$(4)):PLO
T 15,9
1610 I=0:FOR N=19 TO 16 STEP -1:COLOR AS
C(CHAR$(2)):PLOT I,N:NEXT N
1620 FOR N=15 TO 13 STEP -1:COLOR ASC(CH
AR$(3)):PLOT I,N:NEXT N
1630 FOR N=12 TO 10 STEP -1:COLOR ASC(CH
AR$(2)):PLOT I,N:NEXT N
1640 FOR N=9 TO 7 STEP -1:COLOR ASC(CHAR
$(2)):PLOT I,N:NEXT N
1650 COLOR ASC(CHAR$(4)):PLOT 0,6
1660 COLOR ASC(CHAR$(6)):PLOT 1,19:PLOT
7,19:PLOT 12,19:PLOT 6,12:PLOT 8,14:PLOT
 17,10
1670 GOTO 750
2000 REM END GAME ROUTINE
2002 POSITION 0,0:? #6;"ALL CLEAR
    "
2005 CITY=0:POKE 704,118:POKE 705,118:PO
KE 706,118:POKE PLY,181:POKE PLY1,181:PO
KE PLX2,1
2010 FOR I=0 TO 17:FOR N=6 TO 19
2020 LOCATE I,N,XX
2030 IF (XX=43) OR (XX=45) OR (XX=60) TH
EN CITY=CITY+1
2040 NEXT N:NEXT I
2050 SC=INT((CITY/124)*100)
2060 FOR N=6 TO 19:FOR I=0 TO 19:SOUND 0
,75+I,8,8:POSITION I,N:? #6;" ":NEXT I:N
EXT N:SOUND 0,0,0,0
2070 POSITION 0,0:? #6;"
    "
2075 POSITION 0,0:? #6;"
                                ":POSIT
ION 1,1:? #6;"METEORS DESTROYED":POSITIO
N 8,3:? #6;0
2080 POSITION 5,5:? #6;"YOU SAVED":POSIT
ION 8,7:? #6;SC;"%":POSITION 4,9:? #6;"O
FF THE CITY"
2130 POSITION 0,11:? #6;"TO PLAY AGAIN P
RESS":POSITION 7,13:? #6;"start":FOR T=1
 TO 50:NEXT T:POSITION 7,13
2140 ? #6;"      ":FOR R=1 TO 50:IF PEEK(
53279)=6 THEN R=50:GOTO 2160
2150 NEXT R:GOTO 2130
2160 FOR N=1 TO 11 STEP 2:FOR I=0 TO 19:
SOUND 0,75+I,8,8:POSITION I,N:? #6;" ":N
EXT I:NEXT N:SOUND 0,0,0,0
2170 GOTO 1500
3000 POSITION 0,2:? #6;"the city is in p
eril":? #6;"a swarm of meteors"
3010 ? #6:? #6;"is heading for earth":?
#6;"your helicopter"
3020 ? #6:? #6;"cannot enter the":? #6:?
 #6;"danger zone. destroy"
3030 ? #6;"the meteors with":? #6:? #6;"
short range missiles"
3050 GOTO 1000
```

Communication to Tracker Z680 ... unprogrammed android in your sector. Type: security droid. Status: control malfunction. Solution: terminate ... message ends.

Another assignment for the overworked and underpaid Tracker. A dangerous job hunting down rogue androids. You never know just what you are likely to come up against. Some of them are pretty tough customers. But then, so are the Trackers ...

These men are the bounty hunters of the 21st century. Seeking out and destroying rogue androids who get too big for their programming sequence. Now you can join the elite ranks of these modern day hunters and save the world from the dangerous androids.

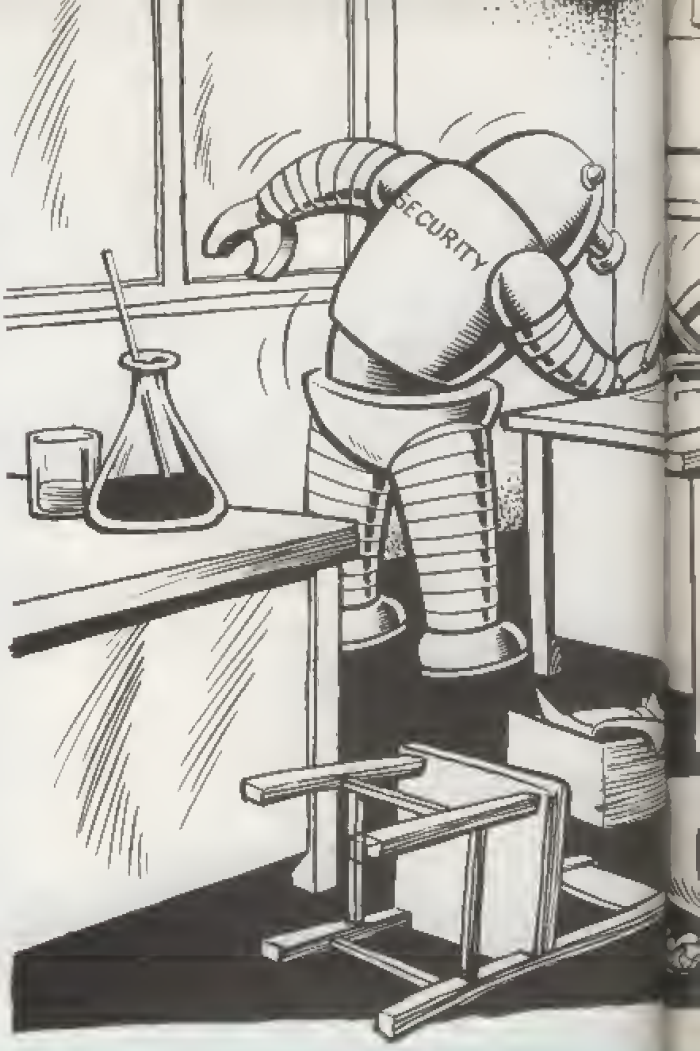
The fugitive android lurks somewhere among the obstacles on your Tracker control screen, displaying the sector your Tracker patrols. The Tracker must catch the android within 18 moves or the fugitive realises it is being followed with nasty consequences for the Tracker. To catch the android the Tracker first has to work out the best route to reach his target and input them into his control computer. The complete set of moves must be typed in — up to 18 — and then just hit the return key and sit back and watch.

The Tracker on screen follows the appropriate course step by step.

While this is going on a small arrow points to the appropriate instruction on the line the player has keyed in, and the move number is shown. Inputs are: L = left, R = right, U = up, D = down.

Remember totake care when you are typing the listing into your machines. If you make a mistake it could mean many frustrating momems.

So to save your sanity check each line carefully — and only turn to the Bug Hunter as a last resort!



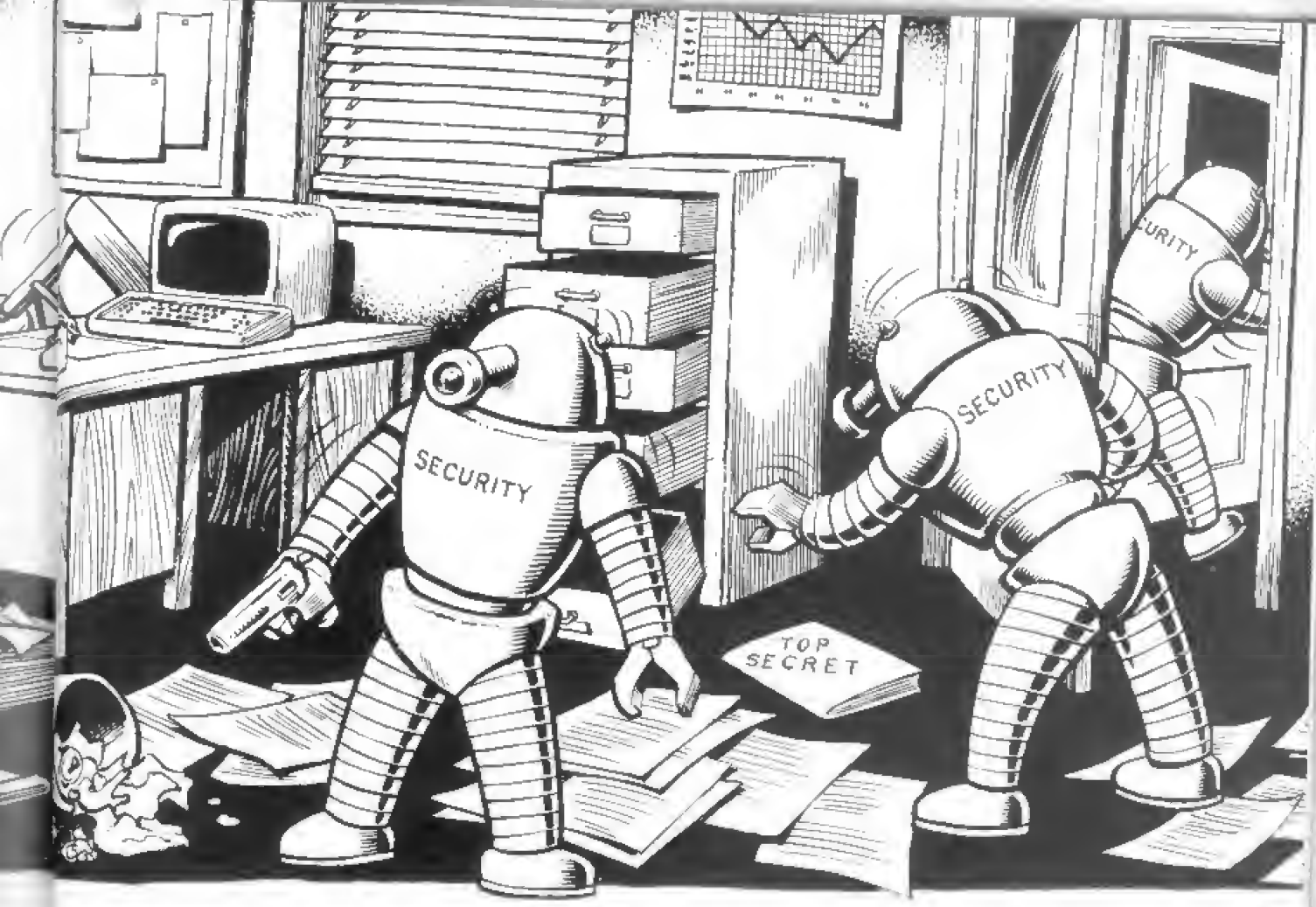

BY RICHARD BARTON

# TRACKER

RUNS ON AN UNEXPANDED VIC-20

Variables
Z = step count for display on screen.
CO = colour address offset from character address.
S1, S2, S3 = Vic sound addresses.
V = volume.
U, D, L, R = represent screen codes form various arrows (Tracker).
G = Grid display.
C = border of grid.
Q = fugitive position.
X = tracker position.
Y = represents whatever arrow code is being used at any time (U, D, L R) (e.g. = Y = R).
MS = special sound effect routine.
T = time delay.

Program notes
Lines 100 to 140 creates the grid display.
Lines 220 to 280 creates the random obstacles on the grid.
Lines 283 to 288 draws the border around the grid.
Lines 300 to 320 draws the fugitive in a random position.
Line 340 draws the initial starting position of Tracker.
Line 400 tests length of inputted directions.
Lines 520 to 585 moves Tracker and tests positions.
Lines 700 to 760 tests for a "HIT".
Lines 800 to 960 gives sound effects for "HIT" or "MISS".




```
20 PRINT"■"
40 CO=30720:Z=0
60 U=1:D=22:L=60:R=62:X=7822
80 S1=36874:S2=36875:S3=36876:V=36878
100 FORG=7680TO7921
120 POKEG,122:POKEG+CO,0
140 NEXTG
220 FORB=1TO40
240 M=INT(RND(1)*241)+7680
260 POKEM,160:POKEM+CO,6
280 NEXTB
283 FORC=7680TO7701:POKEC,160:POKEC+CO,0:NEXTC
284 FORC=7701TO7943STEP22:POKEC,160:POKEC+CO,0:NEXTC
286 FORC=7943TO7922STEP-1:POKEC,160:POKEC+CO,0:NEXTC
288 FORC=7922TO7680STEP-22 POKEC,160:POKEC+CO,0:NEXTC
300 Q=INT(RND(1)*241)+7680
310 IFPEEK(Q)=160THEN300
320 POKEQ,102:POKEQ+CO,2
340 POKEX,R:POKE8098+CO,2
360 PRINT"■■■
```

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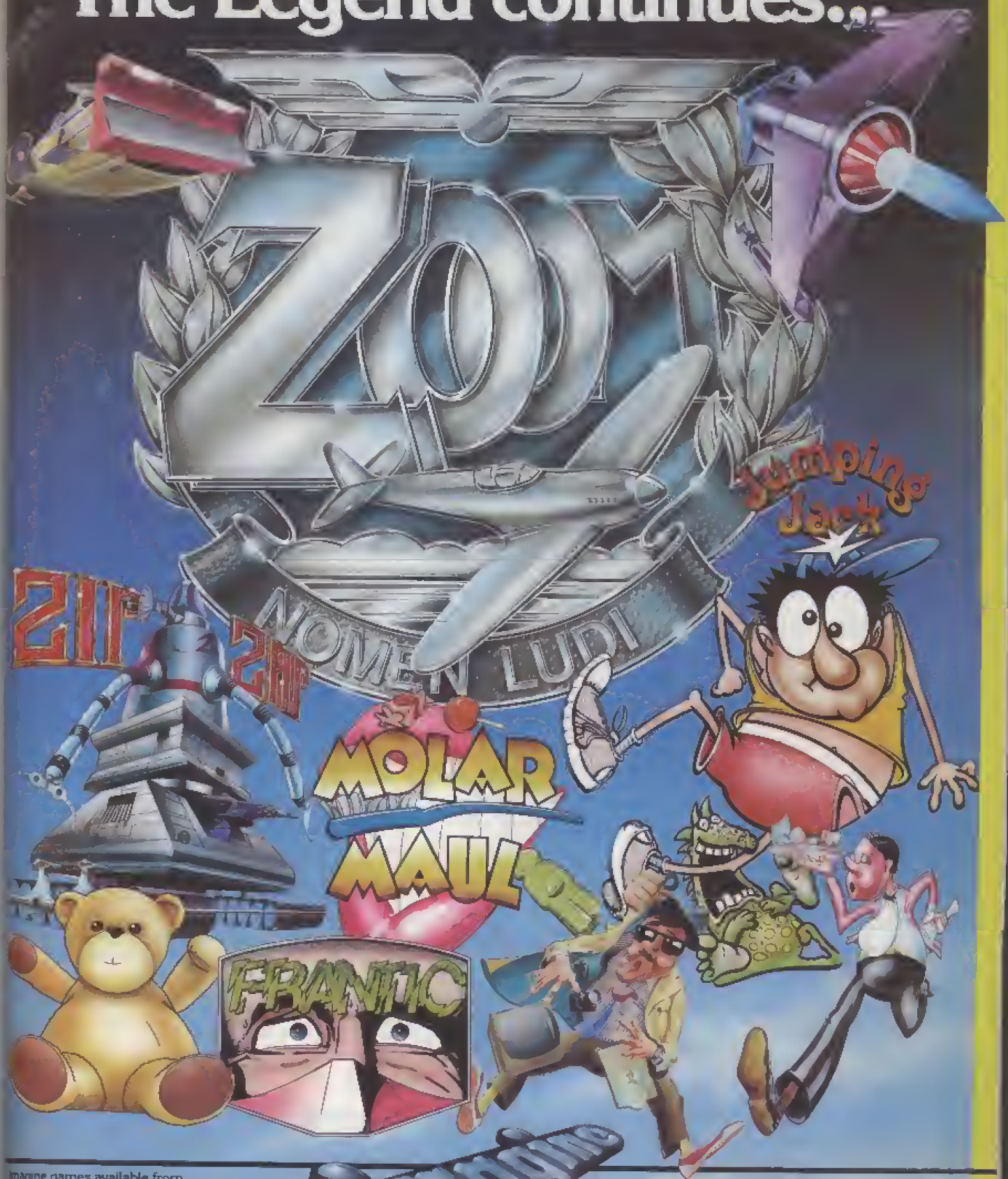


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## DATA FOR GRAPHICS

```
1 FOR x=65368 TO 65535
2 READ d: POKE x,d
3 NEXT x
4 DATA f<
60,126,90,219,255,255,219,137,25
5,0,0,0,0,0,0,255,129,129,129,12
9,129,129,129,129,252,2,1,1,1,1,
2,252,129,129,129,129,129,129,66
,60,63,64,128,128,128,128,64,63,
60,66,129,129,129,129,129,129,60
,126,255,248,248,255,126,60,36,1
02,231,255,255,255,126,60,60,126
,255,31,31,255,126,60,60,126,255
,255,255,231,102,36,0,0,0,0,0,0,
1,255,1,1,1,1,1,1,1,1,128,128,12
8,128,128,128,128,128,255,0,0,0,
0,0,0,0,60,90,90,255,255,255,90,
74,15,48,64,64,128,128,128,128,1
,1,1,1,2,2,12,240,128,128,128,12
8,64,64,48,15,240,12,2,2,1,1,1,1
```

```
  10 REM A.Beale © 1983
  15 REM  SAVE "Pacman" LINE 777
7: SAVE "Pacman C"CODE USR "a",2
1*8
  20 LET hs=0: LET c=0
  25 LET s=0: LET l=2
  30 DATA .3,0,.3,0,.3,0,.2,-5,.
2,-5,.2,0,.4,0,.5,4
  31 DATA .3,0,.3,0,.3,0,.2,-5,.
2,-5,.2,0,.3,0,.5,-3
  32 DATA .3,0,.3,0,.3,0,.2,-5,.
2,-5,.2,0,.3,0,.3,4
  33 DATA .3,5,.3,6,.3,5,.3,4
  34 DATA .3,0
  39 DATA .4,3,.4,0
  50 RESTORE : BORDER 0: PAPER 0
: CLS
 100 INK 1: PRINT TAB 5;"qbbbbbb
bbobbbbbbbbt"
 110 PRINT TAB 5;"c.......c....
....c"
 120 PRINT TAB 5;"cuqt.qot.c.qot
.qtuc"
 130 PRINT TAB 5;"c.sr.slr.e.slr
.sr.c"
 140 PRINT TAB 5;"c.............
....c"
 150 PRINT TAB 5;"c.fd.g.fbobd.g
.fd.c"
 160 PRINT TAB 5;"c....c...c...c
....c"
 170 PRINT TAB 5;"sbbt.nbd.e.fbm
.qbbr"
 180 PRINT TAB 5;"   c.c.......c
.c   "
 190 PRINT TAB 5;"fbbr.e.qd ft.e
.sbbd"
```

Late at night, when we were sitting around looking at programs for this year book in the C&VG office we suddenly hear a mysterious sniffing sound coming from the computer room. Expecting to find Mal Function up to no good among the software we crept up to the door and slowly pushed it open. Not a Bug in sight. But sitting in the middle of the floor was a small round yellow being with a small tear running down its chubby cheek. A Pac-man. "What's wrong little fellow?" we asked. "I've heard you are doing a great programs we have known section in the yearbook," it said, wiping away another tear. "Why, yes," we replied, "But why are you upset? Pac-men are usually happy little creatures." "A little ghost told me that I was being left out!", it sobbed. "How could we leave you out! Everyone loves a Pac-man!"

Its round face brightened. "Really!" it exclaimed. "Of course!" we said. "Just wait until I see that ghost!" said the Pacman, gulping down a powerpill, "I'll soon sort him out!" And with that he disappeared in a puff of golden smoke, leaving behind him this neat little listing for the Spectrum.

This program gets as close to the original arcade version as is possible within the limits of the Spectrum. There are four power pills, two escape tunnels, and all the video-pills a Pac-man can eat. Because of the limitations of Basic there is only one ghost — but he's a mean Pac-hunter. And there's a nice twist to the original theme which gives the little muncher additional problems. The power pills can be transformed into poisonous pills by the devious ghost. While they are poisonous to the Pac-man the pills stop flashing. You get three lives as in the arcade version and the Pac-man is controlled by using the "Q" key to move up, "Z" down, "M" left and "N" right.

Program notes

When entering the maze-printing section of the program the dots are full stops

```
 200 PRINT TAB 5;"    ...c a c..
.   "
 210 PRINT TAB 5;"fbbt.g.sbbbr.g
.qbbd"
 220 PRINT TAB 5;"   c.c.......c
.c   "
 230 PRINT TAB 5;"qbbr.e.fbobd.e
.sbbt"
 240 PRINT TAB 5;"c........c....
....c"
 250 PRINT TAB 5;"c.ft.fbd.e.fbd
.qd.c"
 260 PRINT TAB 5;"cu.c.........
.c.uc"
 270 PRINT TAB 5;"nd.e.g.fbobd.g
.e.fm"
 280 PRINT TAB 5;"c....c...c...c
....c"
 290 PRINT TAB 5;"c.fbblbd.e.fbl
bbd.c"
 300 PRINT TAB 5;"c.............
....c"
 310 PRINT TAB 5;"sbbbbbbbbbbbbb
bbbbr"
 311 LET i=0: LET u=0: LET t=0
 392 FOR f=1 TO 31: READ a: READ
 b
 394 BEEP a-.1,b: NEXT f
 399 LET j=PI: LET m=PI
 400 INK 6: FLASH 1: PRINT  INK
```

and must be coloured with ink 7 (white). The maze is drawn using user defined graphics and must be coloured using ink 1 (dark blue. To colour the maze do not use the INK command. Press CAPS SHIFT and SYMBOL SHIFT together. Then hold down the CAPS SHIFT key and press the appropriate ink key. This method saves memory and is necessary if the program is to run on a 16k machine. User defined graphics are shown as capital letters in quotes and should be entered in graphics mode. This program runs on a 48K machine. To run in 16K add line 5 CLEAR 65367: LOAD"". Then type in lines 1-5 and save on tape. Type NEW and enter the rest of the program.

To play the game, load in the first part and run it. This will then define the characters and load in the main listing.

# PACMAN

```
6;AT 16,6;"u";AT 16,22;"u"
 410 PRINT AT 2,6;"u";AT 2,22;"u
"
 421 FLASH 0: PRINT AT 0,0;"SCOR
E";AT 0,5;
 422 PRINT AT 0,24;"HI-SCORE";AT
 2,24;hs
 425 LET y1=8: LET x1=14
 427 PRINT AT 21,0;"      ": FOR
f=0 TO l-1: PRINT  INK 6;AT 21,f
*2;"h": NEXT f
 430 PRINT  INK 7;AT 11,12;"Read
y"
 431 PRINT  INK 6;AT 16,14;"j"
 432 FOR F=1 TO 150: NEXT F: PRI
NT AT 11,12;"sbbbr"
 440 PRINT  INK 0;AT 10,4;"a";AT
 10,24;"a"
 445 NEXT f
 447 PRINT  OVER 1;AT 8,14;"a"
 450 LET a$="jkih"
 460 LET x=14: LET y=16
 465 LET a=1
 470 LET b$="5"
 477 PRINT AT 10,14;" "
```

```
 480 IF INKEY$<>"" THEN  LET b$=
INKEY$
 482 IF b$>"4" AND b$<"9" THEN
LET a=CODE b$-52
 484 BEEP .01,1/5
 510 PRINT AT y,x;" "
 520 LET y=y+(a=2)-(a=3): LET x=
x+(a=4)-(a=1)
 530 LET c$=SCREEN$ (y,x): IF c$
<>" " THEN  GO TO 700
 540 PRINT  INK 6;AT y,x;a$(a)
 545 PRINT  OVER 1;AT y1,x1;"a"
 550 IF j=y1 AND m=x1 THEN  LET
u=4: REM 3200
 552 LET u=u-1: IF u>0 THEN  GO
TO 3200
 561 LET j=y1: LET m=x1
 563 IF t>0 THEN  LET t=t-1: GO
TO 3000
 565 LET y1=y1+(y1<y)-(y1>y)
 566 IF y1=y AND x=x1 THEN  GO T
O 1000
```

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```
 570 IF SCREEN$ (y1,x1)="" AND A
TTR (y1,x1)<>134 THEN  LET y1=J
 580 LET x1=x1+(x1<x)-(x1>x)
 590 IF y1=y AND x=x1 THEN  GO T
O 1000
 600 IF SCREEN$ (y1,x1)="" AND A
TTR (y1,x1)<>134 THEN  LET x1=m
 610 INK 4: IF t>0 THEN  INK 7
 620 PRINT  OVER 1;AT y1,x1;"a"
 690 GO TO 480
 700 IF c$<>"." THEN  GO TO 710
 702 LET s=s+5: PRINT AT 2,0;s:
LET i=i+1: BEEP .01,30
 704 IF i>177 THEN  GO TO 2000
 707 GO TO 533
 710 IF ATTR (y,x)=0 THEN  GO TO
 800
 715 IF ATTR (y,x)=134 THEN  GO
TO 750
 717 IF ATTR (y,x)<>1 THEN  GO T
O 1000
 720 LET y=y-(a=2)+(a=3): LET x=
x-(a=4)+(a=1): GO TO 535
 749 REM got big dot
 750 FOR g=30 TO 5 STEP -5: BEEP
 .01,g: NEXT g: FOR g=5 TO 30 ST
EP 5: BEEP .01,g: NEXT g
 760 LET t=30
 770 LET s=s+25: PRINT AT 2,0;s:
 GO TO 535
 800 IF x=4 THEN  LET x=23
 810 IF x=24 THEN  LET x=5
 820 GO TO 533
1091 IF SCREEN$ (y,x)="." THEN
LET i=i+1
1092 PRINT AT y,x; OVER 1;"a": I
F SCREEN$ (y,x)="." THEN  LET i=
 i+1
```

```
1095 IF t>0 THEN  GO TO 1300
1100 FOR f=1 TO 4
1105 PRINT AT y,x;"a": FOR g=0 T
O 6 STEP 2: BEEP .01,g: NEXT g:
PRINT AT y,x;"p": FOR g=6 TO 0 S
TEP -2: BEEP .01,g: NEXT g: NEXT
 f
1110 INK 6: DATA "i"," ","_"
1115 RESTORE 1110
1120 FOR g=30 TO 10 STEP -10
1123 READ a$: PRINT AT y,x;a$: F
OR f=1 TO f
1130 BEEP .015,f+g: NEXT f: NEXT
 g
1140 PRINT AT y,x;" ": PAUSE 14
 BEEP .1,0: PAUSE 8: BEEP .1,5
1200 LET l=l-1
1210 IF l=-1 THEN  GO TO 1500
1220 GO TO 425
1300 PRINT  OVER 1;AT y,x;"a"
1301 FOR g=-10 TO 40 STEP 5: BEE
P .01,g: NEXT g
1310 PRINT  INK 6;AT y,x;a$(a)
1320 LET s=s+200: PRINT AT 2,0;s
1330 LET y1=8: LET x1=14
1333 PRINT  OVER 1; INK 4;AT 8,1
4;"a"
1335 LET t=0
1340 GO TO 535
1500 INK 7: PRINT AT 10,10;"GAME
 OVER"
1510 IF s>hs THEN  LET hs=s: PRI
NT AT 2,24;hs: PRINT AT 14,2;"(Y
ou have the high-score!)"
1511 PAUSE 50
1520 PRINT  FLASH 1;AT 5,2;"Pres
s any key to begin..."
1530 IF INKEY$<>"" THEN  GO TO 1
530
1540 IF INKEY$="" THEN  GO TO 15
40
1600 GO TO 25
2000 PAPER RND*6+1: FLASH 1: CLS

2010 FOR f=0 TO 40 STEP 10: FOR
g=0 TO f STEP 3: BEEP .02,g: NEX
T g: NEXT f
2020 PAPER 0: FLASH 0: CLS
2040 RESTORE
2041 INK 6
2042 LET c=c+1: IF c>1 THEN  GO
TO 3500
2050 FOR f=1 TO 31: READ a: READ
 b: BEEP a-.15,b+6
2060 PRINT AT 10,f-1;" "; INK 6;
AT 10,f;"h"
2070 NEXT f
2075 RESTORE : LET g=0
2077 INK 4
2080 FOR f=0 TO 30
```

```
2090 READ a: READ b: BEEP a-.15,
b
2091 PRINT AT SIN g*3+10,f-1;" "
2095 LET g=g+.5
2100 PRINT AT SIN g*3+10,f;"a"
2110 NEXT f
2120 PRINT  INK 6;AT 10,31;"k"
2130 INK 6: CIRCLE 199,147,29
2140 CIRCLE 230,120,8
2150 PRINT AT 8,30;"o"
2160 PRINT  INK 7;AT 3,22;"Oh No
!"
2165 PAUSE 80
2170 CLS : INK 6: PRINT AT 10,31
;"j"; INK 4;AT 11,30;"a"
2180 FOR f=30 TO 0 STEP -1
2190 BEEP .005,50-f: PRINT AT 10
,f;"j ": NEXT f
2200 PRINT AT 10,0;" "
2210 GO TO 50
2999 STOP
3010 LET y1=y1+(y1>y)-(y1<y)
3040 IF SCREEN$ (y1,x1)="" AND A
TTR (y1,x1)<>134 THEN  LET y1=j
3044 LET x1=x1+(x1<23 AND x1>x)-
(x1>5 AND x1<x)
3050 IF SCREEN$ (y1,x1)="" AND A
TTR (y1,x1)<>134 THEN  LET x1=m
3100 GO TO 610
3200 IF u=3 THEN  LET o=INT (RND
*4)
3210 LET x1=x1+(x1<23 AND o=0)-(
o=1 AND x1>5): LET y1=y1+(o=2)-(
o=3)
3220 IF SCREEN$ (y1,x1)="" THEN
 LET x1=x1-(o=0)+(o=1): LET y1=y
1-(o=2)+(o=3)
3225 IF x1=m THEN  GO TO 580
3230 GO TO 610
3510 IF c=2 THEN  GO TO 4300
3520 IF c=3 THEN  GO TO 4400
4310 FOR f=0 TO 30
4320 READ a: READ b
4322 BEEP a-.15,b
4325 PRINT  INK 6;AT 10,f;" h"
4328 PRINT  INK 4;AT 8,31-f;"a "
4330 NEXT f
4332 PAUSE 20
4333 RESTORE
4337 FOR f=30 TO 16 STEP -1
4340 READ a: READ b
4342 BEEP a-.15,b+24
4348 PRINT  INK 6;AT 10,f;"j ";
INK 4;AT 8,31-f;" a"
4355 NEXT f
4358 PRINT  INK 7; FLASH 1;AT 9,
16;"!": INK 6: PRINT AT 10,16;"i
"
4360 PAUSE 50: PRINT AT 9,16;" "
;AT 10,16;"j": PAUSE 50: PRINT A
T 10,16;"k"
```

```
4363 FOR f=10 TO 21: PRINT AT f,
16;"k": BEEP .02,f: PRINT AT f,1
6;" "
4370 NEXT f
4373 PRINT AT 6,16;"?"
4375 PAUSE 60: GO TO 50
4410 FOR f=0 TO 14
4420 READ a: READ b: BEEP a-.15,
b
4422 PRINT  INK 6;AT 10,f;" h";
INK 4;AT 10,31-f;"a "
4427 NEXT f
4430 INK 2
4434 PLOT 130,100
4440 DRAW -30,40
4450 DRAW 30,0,-PI
4455 DRAW 30,0,-PI
4460 DRAW -30,-40
4462 PAUSE 40: PRINT AT 10,15; I
NK 6;"j"
4470 FOR f=15 TO 0 STEP -1
4475 READ a: READ b: BEEP a-.1,b
4480 PRINT AT 10,f; INK 6;"h"; I
NK 4;"a  "
4490 NEXT f
4492 LET c=0
4494 GO TO 50
7777 LOAD ""CODE USR "a",21*8: R
UN
```

ILLUSTRATIONS TERRY ROGERS

# Glossary of Computer Terms

## 6502
The CPU chip used in many populer home computers, e.g. BBC, and Oric, also in the Ateri VCS games centre.

## 6809
A newer CPU chip with some similarities to the 6502. As used in the Dragon-32.

## Absolute
A way of specifying movement on the screen which bears no relation to where you are moving from. E.g., Move to coordinates (10,9). See also reletive.

## Accumulator
The main register in the CPU on which arithmetic and other instructions operate. To use certain functions on other registers requires copying that register into the accumulator, opereting on it and then returning the registers to their originel stete.

## Address
A name, number or label indicating a position in the computer's memory.

## Adventure
The name given to computer simuletions of fantasy role-playing games. The machine plays the part of the adventurer which you control by giving instructions from the keyboard usually in plain English. The objective is usuelly to find treasure.

## Algorithm
A detailed step-by-step description of a problem which can then be solved by translation into part of a computer program.

## Append
A Basic command to loed date or a program into the computer and add it on to the end of whatever is there already.

## Argument
The value on which e Besic function operetes. e.g., POKE has two arguments: an address and its contents.

## Array
A way of storing related pieces of information in the computer, so thet each element of the array shares a common variable name. E.g., instead of storing a list of addresses as A, B, C and their 'phone numbers as D, E, F, two arrays could be used so that the addresses would be lebelled A(1), A(2), A(3) end the phone numbers as P(1), P(2) and P(3). Then, finding the phone number for a known address becomes simple.

## ASC( )
A Basic function to give the ASCII code of the character in the brackets. e.g.

```
PRINT ASC("A")
```

will print 65. If you use ASC on a string, the function will return the ASCII code of the first character in the string.

## ASCII
American Stenderd Code for Information Interchange. A standard code used in most micros to represent 128 characters in a 7 bit code.

## Assembler
A program which helps in writing machine code programs. It ellows the progremmer to enter machine code instructions using mnemonic codes which are easier to remember than the hex values. eg., in 6502 machine code one way of loeding a value into the accumulator is by using hex code A9. With an assembler, the loed-eccumulator instruction is LDA.

## ATTR
A Basic function on the ZX Spectrum used to find deta about a certain point on the screen. For e pair of coordinates it returns the colour of the screen at that point, whether it is in extra-bright mode and whether that particular character is flashing or steady.

## Basic
Beginners' All-purpose Symbolic Instruction Code. A programming language invented in Americe in 1964 and available in almost all computers from those running power stations to those pleying Space Invaders.

## BAUD RATE
The speed at which data bits are sent down a wire. Baud rate is epproximetely equal to bits per second; so with an average of ten bits per byte an interface working at 300 beud can transmit or send about 10 characters per second (or CPS.)

## BEEP
The command used in Basic on the ZX Spectrum and Jupiter Ace to produce sound from the built-in speaker. The two erguments are pitch and duration, where pitch is relative to middle-C and duration is specified in a range from 0 to 255.

## Binary
Bese two. The way in which all informetion is represented in the computer internelly. The only digits used are 1 and 0 which correspond to an electrical signal either being present in e wire or not.

## Bit
A short form for binary digit, a single 1 or 0.

## Border
An area round the edge of a playing screen which can be a different colour from the main playing area. Used mainly to ensure that the whole of the game is visible on the screen.

## Bright
A Basic command to print on the screen in varying brightness. An Atari 800 has 16 veriations while a Spectrum has two.

## Bug
An error in a program which prevents it from working properly.

## Byte
A short form of Binary Eight, used to describe a set of eight bits.

## Cassette

A (usually) plastic case containing magnetic tape on which programs can be stored using two frequencies. The computer can "listen" to a cassette and reconstruct the program at a later date. One frequency is used to represent a 1 and another for a zero. (see binary).

## Centronics

A form of interface for computers used in connecting printers. The centronics interface is a parallel device as opposed to the RS232 interface. It uses eight seperate wires for the date and a complete byte is sent at a time. Originally used in a range of printers by Centronics, this interface is now standard or optional in most micro printers.

## Character

A letter, number or other symbol which is represented by a unique code in the computer. The usuel number of characters is up to 255, which represent numbers, letters and other specialised control characters which meen special things like "turn on printer" or "change to upper or lower case".

## Character set

The range of characters which a computer is able to produce. Some machines have special character sets with mathematical signs or non-English languages.

## Chip

An electronic circuit reduced photographically end produced on a piece of silicon of around ¼ inch square. The final version of a chip is much larger to accommodate the pins which are used to connect the chip to the outside world.

## CHR$( )

A Basic function to output a character whose ASCII code is known. E.g.,

PRINT CHR$(65)

will print a capitel letter A.

## Chunky graphics

The term used to describe graphics made from whole characters as opposed to pixels. These characters are often whole blocks with one or more quarters removed. As found on machines like the ZX81.

## CLOAD

A Basic command to load a program from a cassette as opposed to loading from disk.

## Command

A statement in Basic may be either a command or a function. A command tells the computer to do something and does not expect a numerical or alphabetical result, while a function does. So addition and PEEK are functions but POKE and LIST are commands.

## Compiler

A program which converts a program written in a high level language such as Basic to machine code. This may be useful because machine code programs are hard to write but run much faster than those in Basic. Compilers are often used in the writing of game programs for this reason. A compiler differs from an interpreter because an interpeter translates each line as it is encountered, which may be meny times during a run, while a compiler translates each line once, at the start, before the program is run.

## Copyright

The aree of the law which allows the originator of a piece of work the exclusive right to meke copies of that work. No copyright laws specific to computer programs exist at present. The difficulties arise over the idea of a progrem as much as the program itself. Because the author of a program is entitled to a payment for eech copy sold, copying of programs illegelly is considered theft.

## CPU

Central Processing Unit. The main chip in a computer which organises the work of all the other components in the machine as well as performing logical and arithmetic functions.

## CSAVE

A Basic command to seve a program onto cassette.

## Cursor

A marker on the screen of a computer to show where, if a key is pressed, the next cherecter will appear.

## Data

Information which a program needs before or during a run E.g., a program to draw a square needs to know where on the screen the corners are to be. Note that date in this sense is a plural word as in a list of data. A single item in that list is called a datum.

## DATA

A command in Basic which is used to supply data to the program. The word DATA is followed by the date itself, with each datum separeted by a comma. To access this data the function READ is used.

## Debug

To ensure that a program works properly by removing the bugs from it.

## Decimal

The most common way of representing numbers. It uses the digits 0 to 9. Also known as base 10, or denary.

## DIM

A command used in Basic to reserve space in the computer's memory for an array. Most machines will automatically allow for an array to have 10 elements so if you plan to have anything larger you must use DIM. To reserve enough spece for array D to heve 75 elements, use the command DIM D(75). Short for DIMension.

## DIN

Deutsche Industrie-Norm. A German-designed standard of connections used extensively in audio equipment and, therefore, also in the connecting of cassette recorders to computers. A DIN connector usually has between three and seven connecting pins.

## Disk (or Disc)

An alternative medium to cassettes on which computers can store programs and data. It consists of a thin circle of plastic coated in a similar substance to cassette tape and housed in a flexible protective plestic jacket, which is why they are often called floppy disks or floppies. They are aveileble either 5.25 or 8 inches across and need a special machine called a disk drive for them to be used.

## Disk Drive

The machine which is used to get information on and off disks. Once a disk is inside the drive it is rotated against a head similer to that in a cassette recorder. Disk storage is up to 50 times faster than using cassettes but is also more expensive. An average drive costs 10 times more than a cheap portable cassette recorder.

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# UNBEATABLE

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## Edit
To alter part of a program while leaving the rest unchanged. This can range from the addition of a single character to the removal of a large block of the program.

## Element
A single part of an array identified by the array's name and the element's unique subscript.

## END
A basic command to tell the computer that the end of the program has been reached.

## ENVELOPE
A command used in Basic on the BBC micro to define the characteristics of a note which will be produced by the BBC's SOUND command. ENVELOPE defines the actual wave form of the note and can be used to simulate the sound of various instruments.

## EPROM
Erasable Programmable Read-Only Memory. A ROM chip which can be re-used by exposing it to ultra-violet light which erases it.

## File
A collection of related pieces of data stored for use by the computer on tape or disk.

## Fixed point
The way the computer stores numbers. Instead of moving the decimal point around it is always placed after the first digit. Then the entire number is multiplied or divided by a factor of 10 to make it the correct value. For example . . .
$1/10 = 10^{-1}$
so 0.168 in fixed point format would be $1.68 \times 10^{-1}$

## Floating point
The normal way of specifying decimal fractions. The decimal point is placed between the whole part and the fractional part of the number.

## Floppy disk
see Disk.

## FOR
A Basic command to perform part of a program a certain fixed number of times. The part to be repeated is placed between a FOR statement and a NEXT statement.

## Forth
A computer programming language. It is the language of the Jupiter Ace and is also available for some other micros. Although slightly harder to learn than Basic it runs much faster and is useful for writing games programs. Was originally to be known as "fourth" as in fourth-generation language, but the computer on which it was invented only allowed 5 characters for a program name!

## Function
see Command.

## GET
A Basic function to get a single key press from the keyboard.

## GOSUB
A Basic command which jumps to a certain part of the program called a subroutine. These are useful where the same part of a program may be "called" several times. The subroutine may consist of several program lines and will continue until it finds a RETURN statement. Then control returns to the line after the initial GOSUB.

## GOTO
Jumps to a certain point in a Basic program and continues to run from that point.

## Graphics characters
Characters which the computer can print apart from normal letters and numbers. These can be used in blocks to form pictures. See also Characters.

## Hardware
The physical components of a computer which can actually be seen, as opposed to programs and data which cannot.

## Hexadecimal
(or Hex.) A way of specifying numbers in base 16. Hex uses 15 digits, namely 0 to 9 and then A to F. So eleven in hex is B, and hex 10 is 16 in decimal.

## High level language
A programming language in which the language itself does some of the work for you. For example, Basic is a high level language because most of the commands available in Basic are not available directly in the computer but must be broken down into many simple instructions by the Basic interpreter.

## INK
Used in Spectrum and Oric Basic to specify the colour in which printing on the screen will be.

## INKEY
Similar to GET. As used on Sinclair computers.

## INPUT
A Basic function to get a key or keys from the keyboard. Keeps getting keys until the RETURN or ENTER key is pressed.

## INT
A Basic function to strip a number of its decimal places and leave the integer part. Note that INT will not round the number up or down so INT(5.01) is the same as INT(5.99).

## Integer
A number, positive or negative, which has no fractional part. 1,2,3, −9, −96 are integers, whereas 7.5 is not.

## Interpreter
The program which decodes the statements in a high level language. It converts the lines which you type into simple steps which the CPU can understand.

## Jack plug

A connector used for linking cassette recorders to computers.

## Joystick

A hand-operated controller for video games. A short stick can be pushed in 4 or 8 directions which controls the object on the screen. There is also usually a "fire" button.

## K (or Kb.)

Stands for Kilobytes or a 1024 bytes. The unit used to measure the size of a computer's memory. Usually goes up in multiples of 4 or 8. One byte is equal to about 1 character.

## Language

The set of commands with which a computer is programmed. Basic is the most common language for beginners but special languages also exist for certain jobs. Cobol is mainly used for writing business programs while Fortran is a science and maths-based language.

## LEFT $

The Basic function to take the leftmost characters from a string, thus LEFT$(S$,5) would take the first five characters of string S$.

## LET

Used in Basic to assign a value to a variable, eg., LET X=10 or LET S$="HELLO".

## Line number

Each line in a Basic program must have a line number. When the program is run the lines will be executed in numerical order, and not the order in which they were typed in.

## LIST

A Basic command to produce a copy of the current program on the screen or printer.

## LLIST

List the Basic program on the printer.

## LOAD

Read a program into the computer from cassette or disk.

## Location

The actual position in memory where a byte is stored.

## Low level language

A language in which a limited number of commands can be handled directly and they must be broken down and simplified by the programmer.

## Lower case

The small, non-capital letters available on a keyboard. The characters produced by pressing a key without holding down a shift key.

## LSI

Large Scale Integration. Getting a lot of components into a small area on a chip.

## LPRINT

A Basic command to output to the printer as opposed to the screen.

## Machine code

The lowest level language available on a computer. It is the language which the CPU can directly understand and because it does not need an interpreter, machine code programs run very fast but are complicated to write and debug. A typical machine code program may run 100 times faster than its Basic equivalent.

## Memory map

The way in which the computer organizes its memory. The memory map states where the machine holds its program, variables and Basic interpreter. Most computers also hold the contents of the screen in memory as well so that altering that area of memory will change the contents of the screen. This is known as having a memory-mapped screen.

## Merge

Loading a program or data without destroying the one already in memory. Where program lines are duplicated, the convention is for the incoming line to replace the one already there.

## Microprocessor

A single chip which can get information in, process it and output it.
Similar to CPU.

## Microsoft

A software company responsible for writing the Basic interpreters in many micros.

## MID $

A function in Basic to extract a certain part of a string starting from a certain position and going on for a certain number of characters. MID$(A$,5,3) will be a string made up from A$ starting at position 5 and continuing for 3 characters.

## Mnemonic

A short code which helps in remembering something. For example, in Z80 machine code, the code to compare the accumulator with a value is known by the mnemonic CP A.

## MODEM

Short for MOdulator/DEModulator. A peripheral to convert the signals sent from a computer to the correct frequencies to allow them to be sent over the telephone lines and fed into another computer.

## Monitor

A device used as the display for a computer. It is similar to a TV screen but is of much higher quality and costs more. Monitors cannot normally receive TV signals. A typical colour monitor costs at least twice the price of a portable colour TV.

## Monochrome

Single colour. A computer display which cannot show more than one colour. Usually black and white but can also be green on black, or orange on black.

## Network

A number of computers connected together such that each can communicate with any other and that they can share peripherals which would be too expensive to provide for each computer.

## NEW

A Basic command to tell the computer to forget the current program and to expect another one.

## NEXT

see FOR.

## Nybble

Half of a byte (4 bits.) A byte is made up from two nybbles. The first 4 bits are called the high nybble and the last four are called the low nybble.

## Operating system

The program in the computer which controls the coordination of all the components. Every computer has an operating system. Some operating systems are common to many computers subject to minor alterations. One such system is CP/M which runs on many Z80 based machines. CP/M controls the loading and saving of programs and also control of the disc drive, keyboard and printer. Commands to load and save on one CP/M machine will be almost identical on any other machine with the same operating system.

## OVER

A Basic command to print on the screen on top of the character which is already there.

## PAPER

A command on the Spectrum and Ace to specify the colour of the screen.

## PEEK

A Basic function to look at the contents of a certain location in memory. For example, the character at the centre of the screen on a PET is held in memory location 33268. So to see what character is at the centre of the screen you would use PEEK (33268).

## Peripheral

Additional hardware used with a computer but not an integral part of it. Eg. a disk drive, cassette recorder, printer or joystick.

## Phono plug

A connector commonly used to connect a computer to a TV set or monitor.

## Pixel

Short for Picture Element.
The smallest dot which can be displayed by a computer. Pixels can be used individually or be placed in blocks to make alphabetic or graphics characters.

## POKE

A Basic command to load a certain value into a known location in memory. The syntax of the command is:

POKE address, value

so to put character 46 (a full stop) at the centre of tha screen on a PET, type POKE 33268,46.
See also PEEK.

## Printer

A peripheral used to produce output onto paper which can then be stored, as opposed to output on a VDU which cannot.

## Program

A list of instructions which will be executed sequentially by the computer.

## PROM

Programmable Read-Only Memory.
A ROM chip which can be programmed by a special PROM programming machine. One programmed a PROM cannot be altered or erased.

## RAM

Random-Access Memory.
Memory in a computer which can be altered and is therefore used to hold the current Basic program and data. RAM memory loses its contents when the power is turned off.

## Raster scan

The way in which a TV picture is produced in the set itself. A single dot scans across tha 625 horizontal lines which make up the picture. Whatever the display on the screen, the dot always follows the same course. It goes so fast that the display appears steady and stationary.

## READ

Used in Basic with a DATA statement. It reads one item from the DATA list each time it is called.

## Register

A memory location built into the CPU chip itself, used to hold data temporarily to perform arithmetic and logical functions.

## Relative

A way of specifying direction which does not depend on where you are going but on where you are coming from. Eg., "move 7 positions to the left" is a relative direction.
See also Absolute.

## RENUMBER

A Basic command to alter the line numbers of a program so that they all run in even, neat steps. RENUMBER should also alter any GOTO or GOSUB statements as well to enable the program to run correctly.

## Resolution

The number of pixels which a computer can display on the screen at one time. Tha higher the number, the better quality graphics can be produced.

## RESTORE

Used in Basic with READ and DATA. RESTORE sets the data pointer back to the beginning so that the next READ statement will start reading from the first item in the DATA statement.

## RETURN

See GOSUB.

## RIGHT$

Similar Basic command to LEFT$ but takes the last characters from a string. Eg., RIGHT$ ("therefore", 4) would be "fore".

## RND

A Basic function to produce a random number, used in games and simulations.

## ROM

Read-Only Memory.
A memory chip whose contents cannot be altered. ROMs are used to hold such things as the Basic interpreter and the operating system.

## RS232

The name of an interface used for connecting computer peripherals together. All devices with RS232 interfaces should by definition have the same connections via a 25pin D-plug although some manufacturers vary these for their own use. The RS232 is a serial interface which means that although there are 8 bits to a byte the bits are sent one at a time down a single wire.
See baud rate.

## RUN

A Basic command to start the execution of the current program in the computer.

## SAVE

A Basic command to record the current program on to cassette or disk, so that it can be re-used at a later date.

## Scroll

Moving the contents of the screen up or down by a single pixel or character at a time. Some programs also scroll the screen sideways.

## Shoot-'em-up

A video game where the object is to shoot at aliens which are above you. The first such game was Space Invaders.

## Software

Programs for a computer. The part of the computer which cannot actually be seen (unless printed out on screen or printer) See also Hardwere.

## String

A set of between 1 and 255 characters assigned to the same variable name. Some Basics allow strings of unlimited length, but most allow 255, which is the highest number which can fit in 1 byte.

## Subroutine

A frequently-used part of a program, placed, usually at the end, which can be called whenever needed. Thus although it is used frequently, it only needs to be typed in once.
See also GOSUB.

## Subscript

A number used to identify single elements in an array. Although each element has the same variable name they have different subscripts. Eg,

```
LET A$(7) = "COMPUTER"
```

where the variable name is A$ and the subscript is 7.

## Syntax

The composition of a statement, its arguments and any punctuation. Eg., a certain Basic statement may need two arguments, separated by commas and a semi-colon at the end. If this is not typed correctly it will be rejected by the computer with a "SYNTAX ERROR" message.

## TRACE

A command in Basic which prints out the line number of each statement as it is executed. This can be useful in debugging to check that the program lines are being executed in the correct order.

## Upper case

The characters available on a computer by pressing a key at the same time as pressing a shift key. The shift key usually [illegible] punctuation and graphics for the others.

## User defined graphics

Graphics characters made up of a block of pixels which can be designed by the user. Custom characters can then be made, like a Pacman figure or a space invader.

## User friendly

Describes a program which is easy to operate by non-computer minded people.
A good user-friendly program will help the operator and should produce helpful messages in response to mistakes from the user.

## USR

Used to transfer execution from the Basic program being executed to a machine code routine written by the user. This may be done if a certain part of the program needs to be executed very fast or for certain things which Basic cannot do.

## VDU

Visual Display Unit.
A monitor or TV used as the output device for a computer.

## Vector Scan

The alternative to raster scan. Instead of scanning the whole screen, the dot traces out the shape of whatever it is required to produce. Programming such a device needs great care because if the dot is allowed to stop for just a fraction of a second it will burn straight through the screen! Vector scan produces clearer, smoother graphics.
As used in some arcade games like Atari's Asteroids, and also in the Vectrex.

## Verify

Used in Basic to compare the program currently in RAM with one on tape or disk, to ensure that it has been SAVED correctly.

## Word processor

A program to accept text from the keyboard and help in producing written documents. A good word processor will align the text to the margins, store standard letters on disk etc. Separate files of addresses can be stored so that a single letter need only be in typed once but can be printed many times with different addresses on top.

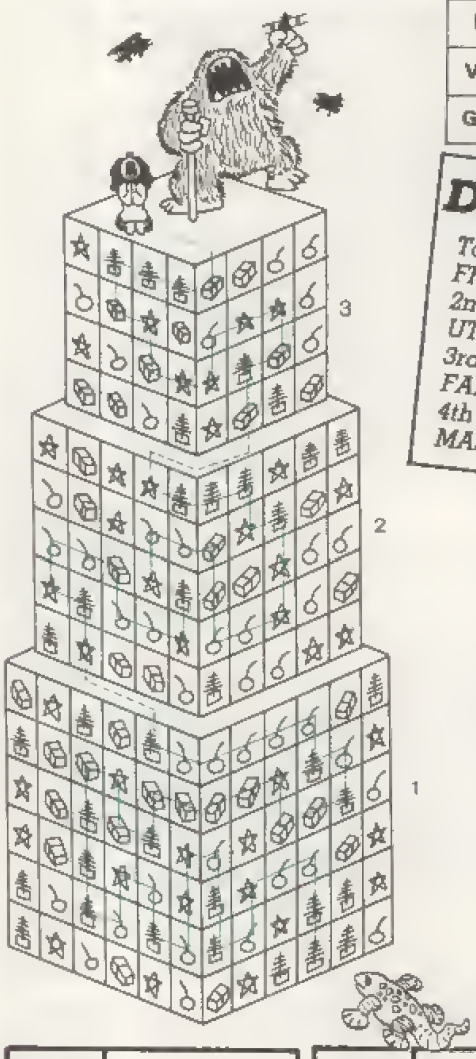
## Z80

A common CPU used in many micros including the Spectrum and Sharp MZ80K.

# PUZZLING

## SOLUTIONS

## CRAZYKONG




| | | | |
|---|---|---|---|
| | RIGHT | | LEFT | | UP |
| | LEFT | | UP | | DOWN |
| | UP | | DOWN | | RIGHT |
| | DOWN | | RIGHT | | LEFT |

## THE SPLURGS OF MOG

| WHO | DIRECTION | LOCATION | WHAT WITH |
|---|---|---|---|
| MEDUSA | SOUTH | CAVES | EVIL SPELL |
| BEELZEBUB | WEST | FOREST | SWORD |
| HYDRA | NORTH | LAKE | FIRE |
| VAMPIRE | X | MOUNTAIN | GOLD CASKET |
| GORGON | EAST | SWAMP | POISON |

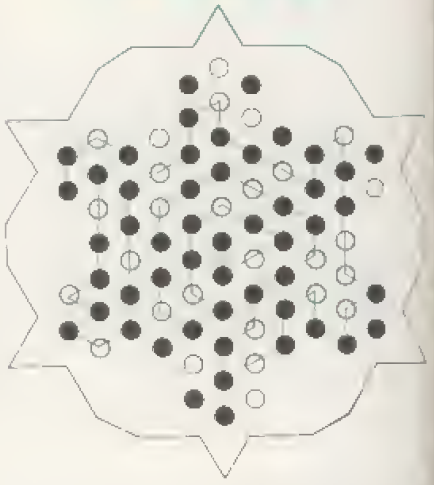
## DAMAGED GOODS

*Top Layer: BERZERK TRICKSHOT FROGGER*
*2nd Layer: GALAXIANS PACMAN UTOPIA*
*3rd Layer: PHOENIX DRACULA PIT-FALL*
*4th Layer: MEGAMANIA STAR-MASTER DEFENDER*

## SNACKBITE

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| I | C | E | D | | | | | |
| D | I | E | T | | | | | |
| T | I | N | | | | | | |
| N | I | E | C | E | | | | |
| E | N | T | I | C | E | D | | |
| D | I | N | T | | | | | |
| T | I | C | | | | | | |
| C | E | N | T | I | P | E | D | E |
| E | D | I | T | | | | | |
| T | I | P | | | | | | |
| P | E | N | C | E | | | | |

## PATRIOTIC PACMAN



SOLUTION TO PATRIOTIC PACMAN
64 is the number of dots in the longest path.

## PUZZLE PAGE

*At the time of going to press 18 moves is the best solution known and it can be achieved as follows:*

*2,1,2*
*0,3,2*
*3,0,0*
*1,0,2*
*0,1,1*
*0,2,2*
*1,1,0*
*1,1,2*
*2,0,2*
*3,1,1*
*1,3,0*
*3,1,2*
*1,1,2*
*2,0,2*
*3,1,0*
*0,2,1*
*3,3,2*
*0,2,0*

## DUCKSHOOT

| | | | | | | |
|---|---|---|---|---|---|---|
| NIGEL: | 25 | 20 | 10 | 10 | 5 | 1 |
| JANE: | 50 | 10 | 5 | 3 | 2 | 1 |
| TRACEY: | 25 | 20 | 20 | 3 | 2 | 1 |

*The common total is 71.*

**Muppet creator Jim Henson put his puppeteers to work on a fantasy epic last year.**

**He created a land peopled by the weird Mystics, cruel Skeksis and gentle Pod People. Through this world two Gelflings are sent on a quest to break the rule of the Skeksis and return peace to the land.**

**A computer program of the quest was released and we at Computer and Video Games asked readers to come up with their own graphic representations of the weird and wonderful creatures from the world of the Dark Crystal.**

**Henson Associates sent us a video cassette of a head of Aughra, one of the "stars" of the film, flown over from America, the book of the film — beautifully illustrated by artist Brian Frood — and an LP of the film score.**

**When Bruce McNally, Henson Associates' creative director came in to judge the entries, he found a runaway winner in Alan Outter's marvellous representation of Jen the Gelfling on the BBC.**

**We show a screen picture of the winning entry over the page and for those who are feeling brave enough to key it in we reproduce the listing to show the work**

# The Dark Crystal Recreated

## By Alan Outter

## Runs on the BBC Model B

```
  10 MODE5:GCOL0,4:MOVE 0,0:MOV
E1280,0:PLOT85,0,1024:PLOT85,128
0,1024:X=24
  20PRINTTAB(8,10);"JEN":FORI=1
TO10000:NEXT I:CLS
  30VDU19,6,4,0,0,0
  40VDU19,3,3,0,0,0
  50 VDU19,0,0,0,0,0
  60VDU 23;8202,0;0;0
  70ONERROR GOTO120
  80 B=4 X=X+8 MOVEX,0
  90GCOL0,B:READ A,B:DRAW X,A*8
-220
  100IF A=180 THEN 80
  110GOTO 90
  120END
  130DATA140,1,143,4,149,1,151,4
,180,4
  140DATA127,1,139,4,143,1,149,4
,180,4
  150DATA124,1,137,4,142,1,144,4
,180,4
  160DATA123,1,125,3,133,1,142,4
,180,4
  170DATA120,1,123,3,138,1,143,4
,180,4
  180DATA119,1,122,3,140,1,146,4
,180,4
  190DATA114,3,141,1,147,4,180,4
  200DATA110,3,143,1,147,4,149,1
,152,4,160,1,161,4,180,4
  210DATA106,3,144,1,147,4,148,1
,161,4,180,4
  220DATA98,0,99,4,104,3,145,1,1
48,3,154,4,162,1,165,4,169,3,170
,5,172,4,180,4
  230DATA97,0,100,4,102,7,138,3,
150,1,154,3,159,1,164,4,169,3,17
0,5,171,4,180,4
  240DATA97,0,100,4,101,7,102,0,
108,7,110,0,113,7,114,0,115,7,13
8,3,149,1,154,3,157,1,161,4,162,
1,167,3,168,5,170,4,180,4
  250DATA95,0,104,1,107,0,109,6,
111,1,115,0,116,7,141,3,158,1,16
0,3,162,4,167,5,170,4,180,4
  260DATA89,0,94,1,95,0,98,1,104
,3,106,1,108,6,112,1,114,0,115,1
,117,0,118,6,133,7,144,3,161,5,1
63,4,164,5,167,4,180,4
  270DATA 58,0,70,4,75,0,77,4,87
,0,94,1,95,0,97,1,101,3,108,1,11
0,0,111,3,112 0,113,1,114,0,115,
1,117,0,118,7,132,6,133,7,145,3,
161,1,163,3,164,1,169,5,171,4,18
0,4
  280DATA46,0,94,1,95,7,96,0,97,
1,102,3,105,1,106,6,107,3,108,7,
110,1,112,3,113,1,115,0,116,6,11
7,1,118,0,119,6,131,7,133,6,134,
7,148,3,161,1,163,3,164,1,169,5,
171,4,180,4
  290 DATA45,0,94,1,95,0,97,1,10
2,3,105,1,106,7,107,3,108,1,111,
0,112,3,113,1,116,0,117,1,118,0,
119,6,126,7,130,6,131,7,133,6,13
4,7,148,3,161,1,162,3,167,1,168,
5,169,4,180,4
  300LISTDATA44,0,50,1,51,0,92,1
,93,0,95,1,97,5,99,7,105,1,107,3
,108,1,113,3,114,1,116,0,117,5,1
19,0,120,7,124,6,125,7,129,6,130
,7,148,3,169,5,170,4,180,4
  310DATA43,0,50,1,52,0,55,1,56,
0,86,3,90,1,95,5,97,7,99,6,103,7
,105,1,107,7,109 1,111,0,112,1,1
16,0,117,1,119,0,120,7,124,6,125
,7,128,6,130,7,150,3,165,4,169,3
,174,4,180,4
  320DATA42,0,51,1,53,0,54,1,56,
0,60,1,62,0,75,1,77,0,78,1,82,0,
86,3,89,7,91,1,95,6,96,7,99,6,10
2,7,105,1,106,5,107,7,109,1,112,
3,113,1,116,0,117,1,118,0,119,7,
136,6,137,7,151,3,164,4,165,5,16
6,4,170,5,172,4,180,4
  330DATA42,0,52,1,53,0,54,1,56,
0,60,1,62,0,75,1,84,0,87,3,88,7,
90,5,91,1,95,5,95,7,105,1,106,5,
107,7,109,1,112,7,113,3,114,1,11
6,0,117,7,130,6,131,7,134,6,135,
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9,6,155,0,157,4
  970DATA180,4
  980DATA30,1,31,3,34,1,35,0,39,
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,1,88,0,90,3,91,0,92,5,93,0,95,1
,96,3,100,0,102,1,104,5,109,3,11
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,152,0,154,6,156,4,180,4
  1000DATA31,1,32,3,35,0,44,3,45,
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,0,92,5,93,0,95,5,96,3,100,0,103
,1,104,5,108,1,109,3,110,5,113,1
,114,5,116,1,119,3,122,5,124,3,1
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,1,142,6,143,0
  1010DATA149,6,151,0,153,6,156,0
,158,4,180,4
  1020DATA31,1,32,3,34,1,35,0,43,
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,0,96,5,99,3,101,0,103,3,104,1,1
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,134,1,135,0,136,1,142,0,144,7,1
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,0,100,7,103,0,111,1,116,0,118,5
,119,1,125,7,126,5,129,3,131,1,1
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,7,149,0,154,6,155,0,156,6,158,0
,159,4,180,4
  1080DATA31,0,33,3,34,0,48,1,50,
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,7,92,0,95,7,98,0,111,1,1110,0,1
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,158,4,180,4
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,0,95,7,99,0,104,7,105,0,113,5,1
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  1100DATA29,0,30,7,32,0,39,1,40,
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,6,95,0,97,6,101,0,105,7,106,0,1
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,0,156,4,180,4
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,148,6,149,7,150,6,151,0,155,4,1
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,1,93,0,96,6,99,0,102,6,129,7,13
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  1160DATA40,0,48,1,50,0,68,3,69,
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,6,142,0,145,6,146,0,150,6,153,4
,180,4
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  1190DATA58,0,71,1,73,0,75,1,77,
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  1200DATA63,0,74,1,76,3,77,0,79,
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,106,0,107,6,110,0,115,6,125,7,1
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,4
  1210DATA65,0,69,1,71,0,75,1,77,
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,140,3,141,0,146,6,149,4,180,4
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